Smithsonian

August 1990

Like a bolt out of the blue, a skydiver free-falls over western Washington (p. 58)

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August 1990

Smithsonian

Volume 21, Number 5

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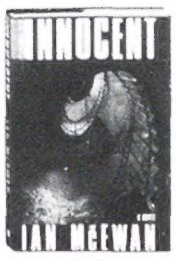

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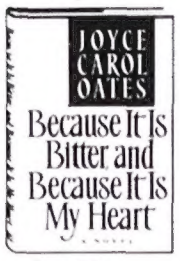

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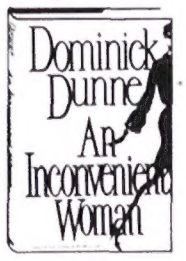

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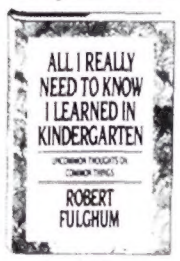

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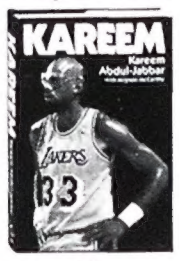

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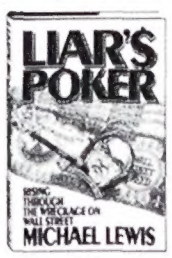

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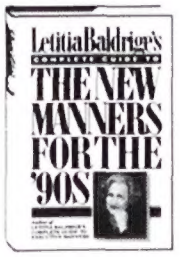

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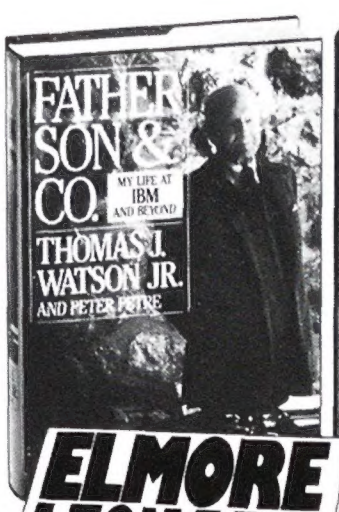

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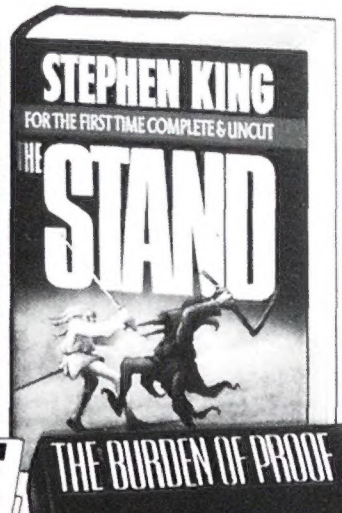

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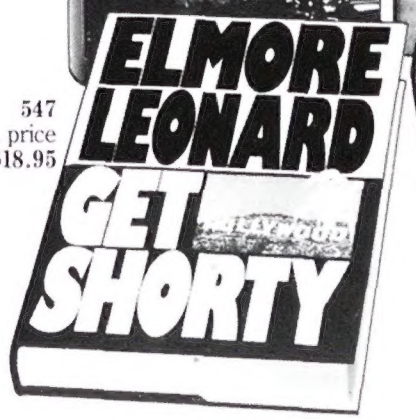

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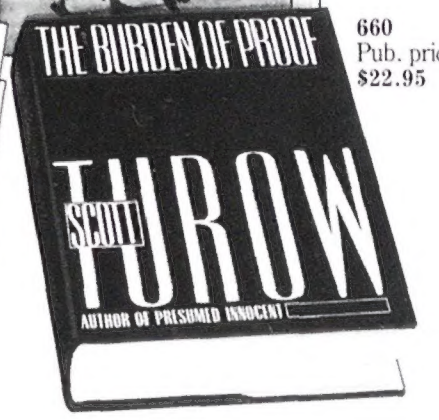

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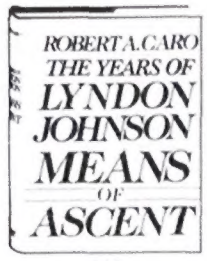

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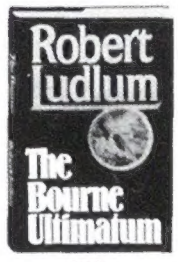

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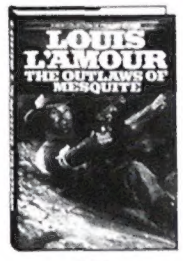

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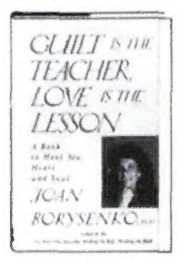

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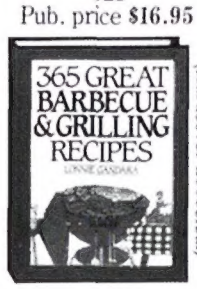

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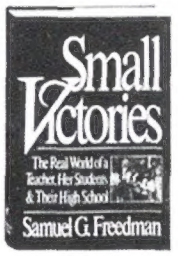

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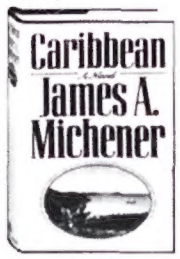

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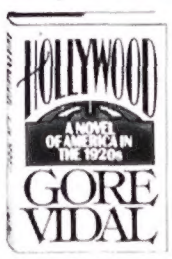

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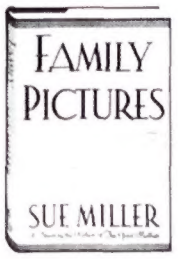

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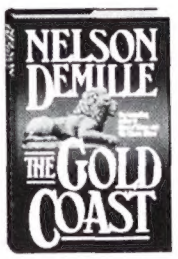

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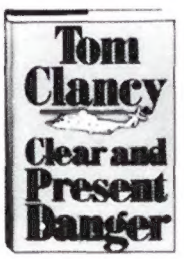

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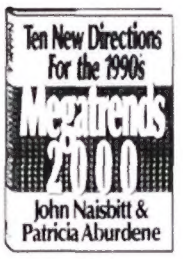

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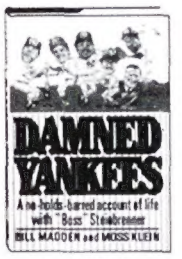

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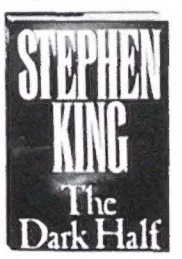

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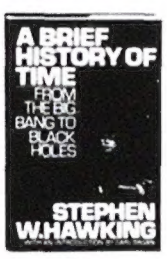

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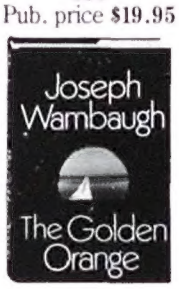

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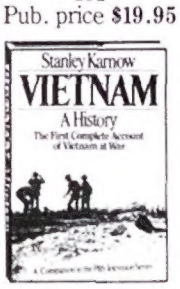

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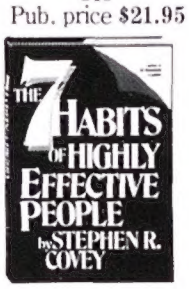

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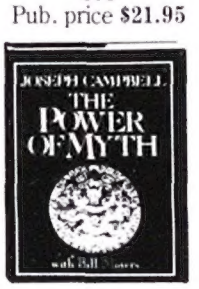

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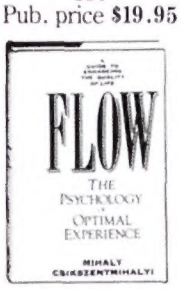

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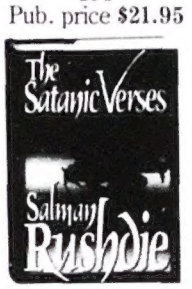

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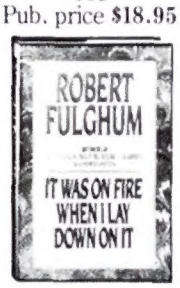

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Secretary Adams' comments

Smithsonian horizons

Public support for science is now generally accepted; why has it become so controversial for art?

Bitterly engaging Congress during this spring and summer has been a polarized debate over reauthorization of the National Endowment for the Arts (NEA). Those seeking to bar the NEA from making awards in cases of alleged obscenity, or to eliminate federal funding for the agency altogether, were notable for their organizational efficiency and conviction. On the other side, a looser but ample coalition attempting to mobilize public support for the agency on an anticensorship basis met with varying success. The NEA's fate may not have been decided by the time this column appears. But whatever the outcome, the debate may be an object lesson concerning the relative valuations we place on culture and science.

No one would deny that the federal budget is thickly strewn with subsidies for special interests and constituencies. If the burden of supporting them can be widely distributed and is not too heavy, most of us are ready to shrug off such measures with resignation as part of the cost of doing business in a democracy.

For science, we can take up the barest outline of the story after World War II. Drawing upon the wartime experience, a national consensus was forged for public underwriting of basic research. Today that consensus is more firmly in place than ever, and the modest constituency on hand at the beginning has grown to assume a central place in our society. Who would disagree that our ensuing national leadership in science and technology (at least until recently) has transformed our industrial economy, our institutions of higher education, and ultimately the quality and security of our lives?

But let us not neglect the whole cost of this enterprise, as viewed by those not directly participating in it who happen to hold more-traditional sets of American values. Tax-supported public investments in basic research have risen into the multibillion-dollar range annually. But even more disturbing to these people may be the characteristic iconoclasm and independence of action of scientific personnel and institutions.

With revolutionary changes in modern biology have come intensified challenges to creationist doctrines, as well as to more-traditional visions of gender and sexuality. Other sources of tension are heightened experimentation with and manipulation of the character and course of life itself. Nor have remarkable advances in health science and technology held us back from the brink of a financial abyss in managing to deliver them to the public at large. The physical sciences may have become less immediately threatening as the dangers of nuclear war recede, but that is, after all, a fairly recent phenomenon.

Public support of science requires an unprecedented tolerance for fairly high levels of uncertainty, controversy and public dissent. And where else must we routinely shoulder the cost of some redundancy and the pursuit of false leads in order not to destroy the freedom of thought and action on which the maintenance of scientific progress depends? In spite of this, public support of scientific research has never really wavered.

Why have things worked out so much less successfully for the arts and humanities? Possibly and partially, because of the greater strength of certain countervailing public values in those areas. Science, too, after all, encounters difficulties over its positions on evolution, fetal research, and trade-offs involved in setting standards of risk or other public policies. But why the ferocious opposition to a program like that of the NEA, only a minute proportion of which could be accused by anyone of supporting obscenity? Its whole program is so modest that it must only rarely reach into the lives of those not seeking it out, and in fact entails less tax cost per person than the price of a good cup of coffee.

Carrying the day for science but not for art, I believe, are two arguments. First, science has quite evidently generated a cascade of useful byproducts even where these were not originally foreseen. But can a way be found to show that contemporary art has similarly transformative effects, rather than having entered into a self-limiting world of private discourse? Second, science advances cumulatively in scope and explanatory power, overcoming its refutations in the course of its growth. But is it unreasonable to suppose that there are equivalent arguments for art? Surely art has always—and perhaps cumulatively—extended the boundaries of insight and perception, providing much of the ambience of individual liberty and cultural diversity toward which, to our pride and pleasure, the whole world now strives. From this viewpoint, I am even tempted to suggest that some part of art may *belong* precisely along the shifting boundaries that successive ages assign to the morally abhorrent or legally impermissible. By evoking the extremes, it helps us all to find a context for the prism of changing norms through which we view the human condition.

I hope the arts have not become so embattled and fragmented that no one is left to take up their general defense while squarely facing these underlying questions.

When I was growing up, you rode a 10-speed, took long road trips, and pedaled furiously all day. Now, it's more relaxed. The kids and I take it slow, poking around these old dirt roads. It's real quiet and the air smells fresh and clean. We've even snuck up on a deer now and then. Plus, it's nice to get out and do something special with my children. Just the three of us.

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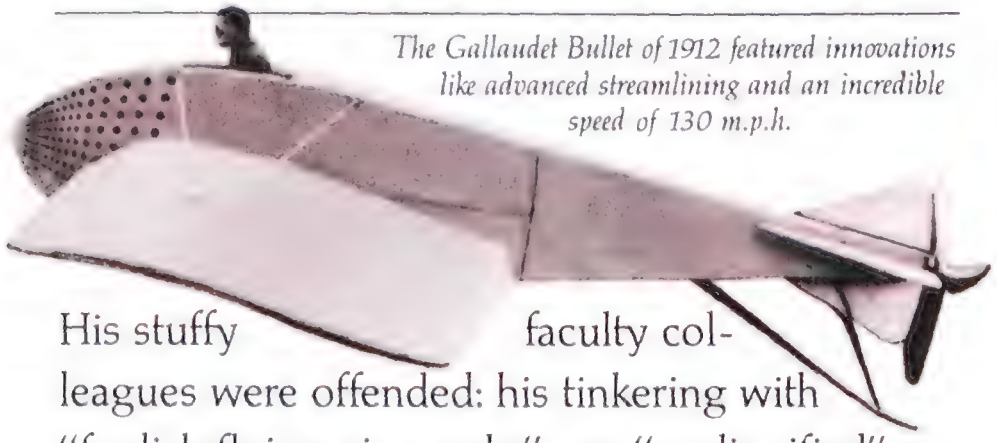
HE WASN'T A WRIGHT BROTHER. BUT HE HAD THE RIGHT IDEA.



The Gallaudet Bullet of 1912 featured innovations like advanced streamlining and an incredible speed of 130 m.p.h.

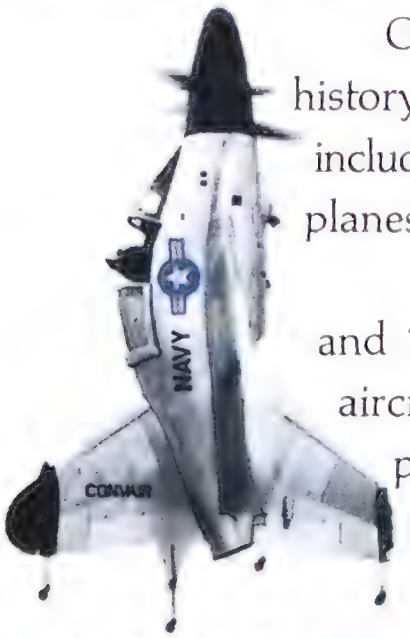
His stuffy faculty colleagues were offended: his tinkering with "foolish flying gimcracks" was "undignified."

But young professor Edson Gallaudet was willing to give up his dignity, and his job, for a new idea about warping the wings of flying machines.

In 1898, he tested a scale model which proved his idea right. And five years later, Wilbur and Orville Wright flew using that same principle.

Today Gallaudet's model is in the Smithsonian, one of two monuments to Gallaudet's inventiveness and persistence. The other is our company.

In 1908, Edson Gallaudet started what many credit as the first aircraft factory in America. Gallaudet Engineering Company became the earliest aircraft ancestor of General Dynamics.



Our Convair "Pogo Stick," a delta-wing prototype of 1953, was the first to rise or land vertically. It flew in excess of 500 m.p.h.

Over the next 82 years, our history of building aircraft has included some of America's famous planes. And famous people.

Eddie Stinson, barnstormer and "birdman," who designed aircraft for many of the pioneer pilots, merged his company with ours. As did Jerry Vultee, whose planes set many distance and speed records, including Jimmy Doolittle's 12-hour cross-country flight.

During WWII, the Consolidated B-24 Liberator went from plan to finished plane in a record nine months and became the most-produced American bomber. After the war, our B-36 Peacemaker became the backbone of America's Strategic Air Command.

Our innovative, delta-wing design made the F-102 the world's first supersonic interceptor. And the B-58 Hustler the world's first supersonic bomber.

Today our F-16 Fighting Falcon is rated

the finest fighter in the world. It well represents our long tradition of craftsmanship and creativity.

Once again, that tradition is about to be tested. In a technology competition against groups from West Germany and Japan, General Dynamics is teaming with four top American companies to develop the National Aerospace Plane.

The RB Racer, made by Dayton-Wright Airplane Company, was the first aircraft to have fully retractable landing gear. Dayton-Wright became an early part of General Dynamics.

To fly from runway to orbit, at speeds up to 17,000 m.p.h., we must invent new science. We must also invent new ways for American competitors to work together. But we are confident.

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Letters to the Editor

Chameleons

Dear Sir: Kudos to James Martin for mentioning, in your June issue, a very serious problem that relates not only to chameleons but to other animals consumed by the pet trade. Their survival rate from the field, through several distributors and shipment to the local store is abysmal. Taken home, the few survivors have little chance after such neglect. Far too often, hopelessly starved and diseased animals are sold to ignorant customers, often by ignorant shopkeepers.

As a graduate student working in university museum collections, I have sorted through far too many 30-gallon garbage bags of reptiles and amphibians that died in the pet trade. These animals included some species that are on the CITES protected list—green iguanas and boa constrictors, rapidly disappearing tortoises, traditionally poor captives such as ball pythons and chameleons, and a surprising number of misidentified venomous snakes. Many of these species, as Mr. Martin points out, are experiencing widespread habitat destruction and leather-trade pressures as well. To add to this carnage with trivial desires for exotic pets is inexcusable.

Joseph R. Mendelson III
Department of Biology
University of Texas at Arlington

Ellis Island

Dear Sir: As a proud child graduate of Ellis Island, I read with special interest Thomas A. Bass' article. In 1992, as we commemorate Christopher Columbus' discovery of America, Ellis Island will symbolize discovery of a new world.

I have happy memories of my days at the school Ellis Island had for children and young people. I spoke no English until, one glorious day, I discovered that I was all of "half past 6" years of age! That was the beginning; from then on I learned rapidly and spoke English and my native Armenian interchangeably.

Shohig Sherry Terzian
Los Angeles

Dear Sir: As a 14-year-old German-Jewish girl, I arrived in the United States on September 2, 1941, on the next-to-last boat to depart Lisbon, then the only neutral harbor in Europe.

Proud possessors of a U.S. visa, we had left Berlin in a sealed train, with a Gestapo escort. Crossing France into Irún, a border town in neutral Spain, we continued, sans escort, through Portugal to Lisbon. After 13 days at sea we reached New York Harbor; it was the most glorious day in our lives. Ellis Island was closed for the Labor Day holiday, so we disembarked on Staten Island.

Yes, there was a table and chair manned by a kind, smiling examiner. In my native tongue, he asked whether I had ever had my lungs removed. Smiling, my father asked, "Do you mean her tonsils?" Indeed, he did.

Viewing your magnificent, haunting photographs, I regret that Ellis Island was not my welcome to our great land, where the streets *are* paved with gold—if you perceive them to be so.

Ellen Tarlow
Glenside, Pennsylvania

Dear Sir: Ellis Island was the first stop for my parents when they immigrated to America from the Netherlands in 1912 and 1916, respectively. Growing up, my brother, sisters and I heard many stories of their voyage here, their stay at Ellis Island and then the eventual cross-country trip by train to settle in California.

Our parents' optimism and hope for the future far overshadowed any discomforts they may have undergone. Not once did we hear a negative account of their stay. They were only happy that they were here in the United States.

Susan Griffiths
Santa Ana, California

Washington National Cathedral

Dear Sir: For nearly 30 years I have had a love affair with this majestic and exciting place, soaring above the Washington skyline.

I first visited the half-finished cathedral in 1962 as a young high school student. Later I sang there as a college student; as a young Air Force officer stationed in Washington I heard Dr. Martin Luther King jr. speak to an overflow audience, then visited again and again en route to various assignments.

Back in Washington once more, as the sun streamed in through the magnificent rose window one fine day in 1987, I was proud and pleased to see my daughter walk down the aisle to sing with hundreds of Girl Scouts, celebrating the founding of scouting in the nation's capital.

John E. Norvell
Springfield, Virginia

Dear Sir: Stanley Meisler's richly detailed article didn't mention zip about the church's organ. Am I to assume it has no organ, or that it has one so unremarkable it deserves no mention?

John Hummel
San Francisco

Washington Cathedral's Great Organ was installed in 1938-39 and over the years has been added to and reworked, until today it is the largest in the Washington area. With nine divisions, 186 ranks and 10,500 pipes, it is designed to play the entire organ literature. Ed.

Dear Sir: There is an active National Cathedral Association with chapters all over the country. Through holding benefits, the tireless efforts of these groups have helped enormously to make the final consecration possible.

Theoline Francis
National Cathedral Association
St. Louis

Dear Sir: Let's tip our hats to the cathedral's longtime man-in-charge, verger John Kraus, he who is responsible for the great style and choreography behind its services. Failing to mention him is almost like telling the history of Egypt and omitting mention of the Nile.

Eldred J. Robinson
Dallas

Dear Sir: Many years ago I was one of those fortunates able to make a small contribution toward the completion of this beautiful edifice.

In September 1959, Dean Sayre invited amateur sculptors to submit designs for gargoyles. I had never sculpted anything but, intrigued by the idea, sent for the blueprints and instructions. I had in mind the typical play pose of our basenji, Kuja Mtoto—down on the forepaws with tennis ball clutched firmly, rear end high in the air.

I ended up using 30 pounds of plastilina clay, reworking the model to "uglify" our slender, graceful darling. Our son, Andy, took pictures from every angle, which I submitted to Clerk of the Works Richard Feller. Weeks passed; I resigned myself to writing off the whole episode as recreation. Then, I received a phone call from Mr. Feller saying the judges were impressed by the photographs and would like me to submit the model itself. But, would I please consult with the chief sculptor, Carl Bush, about a few minor changes? With foreboding, I went to see him.

The requested changes were minor—thickening the back of the torso so the gargoyle would have plenty of support, filling in hollows on top so rain couldn't collect and rot the stone—and again I

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sat back to wait. Finally, I was told my gargoyle [below] had been selected for carving. (It is on the north side of the nave, just west of the transept.)

Andy asked, "Do they award prizes?" "Oh no," I replied, "but just think: a thousand years from now we can look up and see my very own gargoyle." His quick response was, "I would rather think that a thousand years from now I could look *down* and see it!"
Elizabeth C. Kimball
Winchester, Virginia

Washington National Cathedral

Gargoyle *Kuja Mtoto*'s tennis ball has become a bone—for added support.

Media Lab

Dear Sir: Your article left a nagging question: What is the point of poor humans getting skills in any field? Three of the areas mentioned in which computers are successful are ones I have used as a livelihood: teaching, office work and music. Now it appears that I could soon be "rudely excused" while a more cost-efficient machine takes my place.

Are we humans to be demoted to hapless morons, staring for eight hours a day into a computer screen? Are computers going to be telling humans what to do, rather than vice versa? Are computer designers the only lucky ones who will have interesting jobs, while the rest of us live a dronelike existence? Is career development going to become a thing of the past?

Let us—including those computer designers—never forget that *people* are, and always will be, precious and irreplaceable!
Nancy Cottom
North Hills, Pennsylvania

Shipbreaking in Pakistan

Dear Sir: I make my living welding: putting two metals together to make something. On occasion I use a torch to make a nice cut of steel. The man in the photograph on page 35 may be a "skilled welder," but here he is scrapping—cutting apart junk for salvage.
William Blake
Westmont, Illinois

Five of Hearts

Dear Sir: *The Education of Henry Adams* is not called *The Confessions*, so let us not wonder that the joys and griefs of his private life are left out of it. I quote an admirably reticent passage referring to the memorial to his wife, Clover, which he had commissioned: "His first step, on returning to Washington, took him out to the cemetery known as Rock Creek, to see the bronze figure which Saint-Gaudens had made for him in his absence. Naturally every detail interested him . . . he was apt to stop there often to see what the figure had to tell him that was new; but, in all that it had to say, he never once thought of questioning what it meant. He supposed its meaning to be the one commonplace about it—the oldest idea known to human thought. . . . The interest of the figure was not in its meaning, but in the response of the observer. As Adams sat there, numbers of people . . . all wanted to know its meaning. . . . Like all great artists, Saint-Gaudens held up the mirror and no more."
Dainis Bisenieks
Philadelphia

Phenomena

Dear Sir: Scientists do not have a magical crystal ball to tell them with certainty which areas of research will be of direct benefit to human health. Advances can be made only by pursuing many avenues of investigation, even though practical benefits may not always be immediately apparent.

Numerous laboratories spent many years studying a family of viruses that caused disease in laboratory animals, despite the fact that there was no evidence at the time that they had any role in human disease. It turned out that HIV, the causative agent of AIDS, is a member of this virus family. Without the foundation of knowledge gained through the study of these animal models it is likely that we still would not know the cause of AIDS.
Louis Rosenthal
Philadelphia

Dear Sir: It is heartening to those of us in the animal rights movement that some people are beginning to listen and to learn about the multiple ways animals are abused in our society.

The column commented that Peter Singer is "not one whit sentimental about animals." I have never been able to understand why being sentimental should be considered a negative emotion. Feeling, caring and being sentimental are the very qualities that enable us to relate to and empathize with others, the characteristics that make us human. Without them we are no better than machines and robots.
Mary Sternberg
Escondido, California

Rotisserie baseball

Dear Sir: Nathan Cobb does a fine job of explaining his game and his league, but to imply that nothing of this sort existed prior to 1979-80 smacks of Eastern Seaboard provinciality.

I have in my archives a photocopy of the 1970 guide to Hugh McElhenny's Coaching Staff Game, a "fantasy" football format that clearly preceded Cobb's cited seminal soiree in New York City.
Dennis Kelly
San Francisco

Around the Mall

Dear Sir: The Civil War remains from Glorieta, New Mexico, examined by Doug Owsley had been excavated by the Museum of New Mexico. Yvonne Oakes and a hardworking volunteer crew rescued the burials after Kip Siler discovered them when building his house. He stopped construction immediately to allow the excavations to proceed.
David A. Phillips jr.
Director, Research Section
Museum of New Mexico, Santa Fe

Ah, sweet mystery of . . .

Dear Sir: Although Darwin may have liked to refer to "nature, red in tooth and claw," it was Tennyson who quite probably first said it. He most assuredly published it: *In Memoriam*, 1850.
James B. Steele
Elbert, Colorado

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The object at hand

In the Hirshhorn Sculpture Garden, Rodin's famous figures stand witness to an ancient act of civic courage

When England's King Henry V, whose Shakespearean exploits have lately stirred such enthusiasm among filmgoers, sailed for France in 1415, he was claiming a kingdom he considered rightly his. This was not a new idea for kings of England. Henry was merely following in the footsteps of his grim great-grandfather Edward III, whose claim to France could only be bolstered by the fact that Edward's beautiful great-great-great-grandmother Eleanor of Aquitaine had been married to the French monarch Louis VII. Had she not later wedded Edward's own grim great-great-great-grandfather Henry II of England? And had she not brought with her the duchy of Aquitaine, which extended almost from the Loire Valley to Spain? The answer to these questions was yes, and now Edward was setting out to be king of France.

Edward's invasion, which started the Hundred Years' War, began in 1337 in the Low Countries. But by September 1346 his armies were laying siege to Calais, the port city just 30 miles across the Channel from Dover. The siege lasted 11 months. What then happened was chronicled (albeit dubiously) by the French poet-historian Jean Froissart: to soften his demand for unconditional surrender, the English king decreed that "sixe of the chief burgesses of the towne come out bare heeded, bare foted and bare legged and in their shertes," with ropes around their necks and the keys of the town and castle in their hands. These six were to yield themselves purely to Edward's will, and in return the rest of the Calais citizenry were to be pardoned.

As Froissart tells it, Calais' wealthiest citizen, one Eustache de Saint-Pierre, came forward first as a volunteer. "It would be a very great pity to suffer so many people to die through famine if any means could be found to prevent it," he said, "and it would be highly meritorious in the eyes of our Saviour if such misery could be averted."

Five fellow burghers quickly followed his example and were led to the gates of Calais amid "great lamentacyon," as well as, no doubt, considerable relief.

Some 500 years intervene. Then, in 1884, Calais decides it would be fitting to commission a memorial to the sacrifice of its 14th-century citizens. Through one of those astonishing coincidences with which history abounds, the mayor of Calais learned that Auguste Rodin was a student of medieval history and acquainted with Froissart; so the great sculptor was asked to submit a plaster sketch for the memorial.

All did not go well, however. As Abram Lerner, founding director of the Smithsonian's Hirshhorn Museum and Sculpture Garden, has written, the city wanted a traditional monument: "There was, after all, an accepted format for . . . rendering heroism, nobility and sacrifice; a dominant figure in the suitable heroic pose, perhaps a mournful angel placing a wreath on the hero's brow, set on a high pedestal."

Rodin had other ideas. He rejected the use of a single heroic figure. "I have not shown them grouped in a triumphant apotheosis," he told a friend. "Such a glorification of their heroism would not have corresponded to anything real." Instead, he had "threaded them one behind the other."

As if this weren't shocking enough to the monument committee, Rodin's figures had no pedestal. He wanted his burghers to be "affixed to the paving stones" in the Town Hall Square so the citizens of Calais could actually walk among them. The committee was outraged: "Their dejected attitudes offend our religion," they wrote Rodin, who had used not athletic models but common men, friends of his. Their bodies, strained from everyday life, more realistically conveyed the burghers' anguish caused by their fear of dying and their commitment to a noble sacrifice.

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The controversy raged for ten years before a compromise was reached. When the masterpiece, *The Burghers of Calais*, was at last unveiled, the figures stood on a low platform, but the work was placed in a public garden rather than in the Town Hall Square.

Rodin, who had covered most of the expenses for the supplies, never realized a profit on the completed piece. Nearly a decade after his death, perhaps to please his illustrious memory, the city of Calais moved the six figures to the Town Hall Square.

Rodin left his estate to France, which in return created the great Musée Rodin in Paris. Rodin's will specified that only 12 identical bronze casts could be made from the original plaster. The one on view since 1974 in the Hirshhorn Sculpture Garden is the seventh. It was made before World War II by the Alexis Rudier Foundry, the family foundry used by Rodin himself, and for a while it was thought to have disappeared during the Nazi occupation, either hidden for its own good or taken by the Germans. In fact, says Valerie Fletcher, curator of sculpture at the Hirshhorn, "Eugène Rudier kept it at the family estate just outside of Paris."

After the war Abram Lerner heard of its whereabouts and helped collector Joseph Hirshhorn locate it. Thereafter, *The Burghers* graced Hirshhorn's private gardens in Greenwich, Connecticut, for many years, until he donated it to the Smithsonian in 1966, along with the bulk of his vast collection of modern paintings and sculptures.

And what happened to the six selfless burghers themselves? Froissart says that when they arrived at the English camp, Edward III's wife, Queen Philippa, "caused them to be brought into her chambre, and made the haulters to be taken from their neckes, and caused them to be newe clothed . . . and set at their lyberte."

That makes a nice ending. But Froissart was a poet and a Frenchman fond of moral instruction. Whatever happened in 1347, one thing is certain. The burghers are very much alive in 1990. In addition to the one in Washington, D.C., casts of their agonized moment of sacrifice now stand in London, Paris, Brussels, Basel, Los Angeles, Philadelphia, Copenhagen and Tokyo. Not to mention Calais, which today, perhaps as a legacy of the kind of courage the burghers displayed, is a city in northern France, not southern England.

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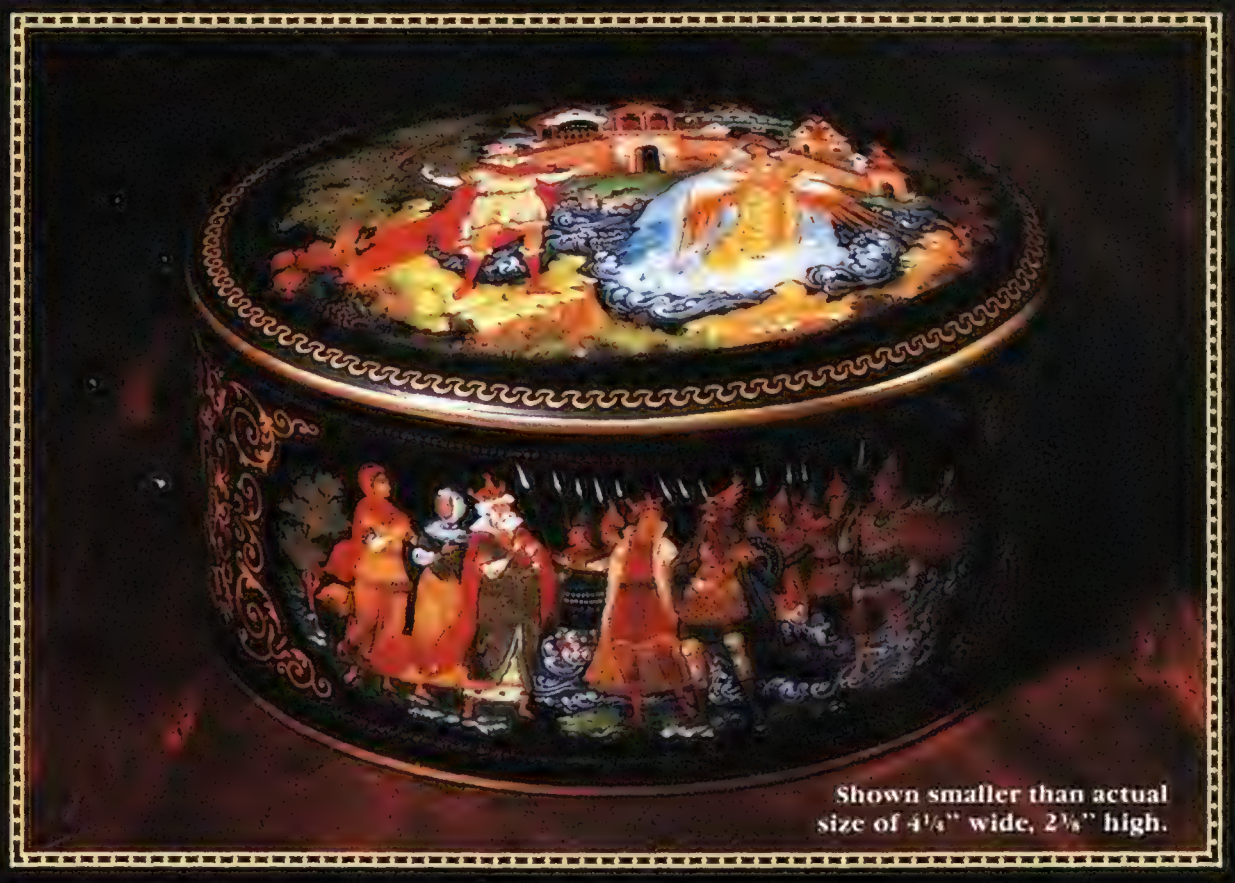

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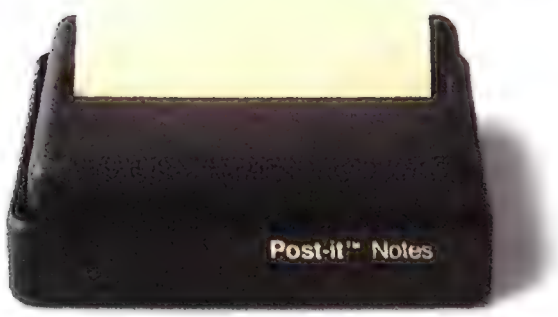

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Phenomena, comment and notes

Following in the footsteps of artist Walter Anderson, students learn how to see nature on a Gulf island

It was a typical weekday morning. Stingrays were sunning themselves in the shallows. Bottle-nose dolphins dawdled 50 feet off the beach, rolling to the surface for air. Ospreys left their nests, whistling peremptorily, to hover over the head of an interloper. At a place on the beach where a pond lay inland, a set of tracks with a furrow between them came out of the water: an alligator. Higher up on the beach a set of doglike tracks crossed the alligator's; a red wolf had been there during the night.

This is Horn Island in the Gulf of Mexico, one of a string of barrier islands that run west from the Florida panhandle. Except for two rangers, one with a wife and child, the island is uninhabited. It lies ten miles off Pascagoula, Mississippi, and is lightly used by picnickers and fishermen. For one week every year, however, the island is invaded. The landing craft are shrimp boats and high-powered runabouts. The people splashing ashore carry duffle bags, coolers, folding chairs—and easels, paint boxes, cases of casting sand. They are students and faculty from the Memphis College of Art, about to confront nature one-on-one.

My subjective image of artists had always been embedded in cities. I think of nighttime streets in rundown sections, pale and physically unfit artists gathered in cheap restaurants. The Memphis group could have been strangely dressed marines. They hit the beach running, spreading out through the dunes, which on the north side face protected Mississippi Sound and on the south side, the open Gulf of Mexico.

Tents up, the 22 students began an exploration of the island that would go on for the entire seven days. Now, I do a fair amount of walking and consider myself in decent if not good condition. But these artists-in-the-making showed me a thing or two as I scrunched through the sand. Not only would they walk right by me as though they were

On Horn Island, Memphis College of Art printmaking instructor David Alford draws on a board that he will make into a woodcut.

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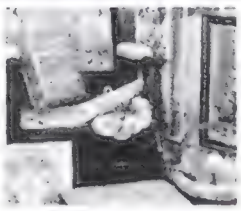

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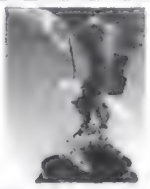

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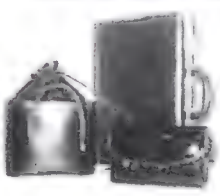

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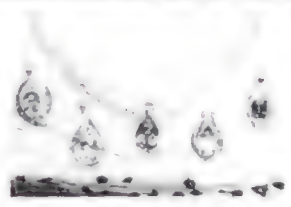

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on some invisible paved path, but they could walk much farther. I found that 3 miles out and 3 back was about my limit. The island is about 13 miles long, so from where we were camped I never made it to either end. Most of the students did, including one young man who has two artificial knees and walks with a stiff-legged gait. No matter where I turned in from the beaches, whether into the dunes, along the interior ponds, or over a flat where the water has washed all the way across the island, fresh tracks greeted me.

This bunch not only saw, they collected. Shells, of course, and driftwood, with its smooth sinuosity. They picked up skulls, catfish skeletons and recently deceased loons to be sketched in camp. Much would be used for collages back in Memphis, but works of art began to sprout among the dunes: mobiles hung from frameworks of poles found on the beach; shell gardens were arranged in neat rows; light bulbs that littered the beaches became wind chimes.

Not all the students were just out of high school. Artist Ray Escue had spent 17 years painting cars for dealerships and in custom shops. (A 1968 Barracuda he had restored had just taken the grand prize in a major show.) He had been admitted to the school on a trial basis and had burned up the track, near the top of all five courses. Laura Hale is the mother of 16-year-old twins, a flight nurse by profession, riding out on helicopters to grisly accidents. Here her little black bag carried not medical instruments but gleaming woodworking tools.

During the day the group scattered, although if I walked far enough I would find somebody with sketchbook and camera, or somebody sitting cross-legged, outlining a design to be cut into a block of cherry wood. (A few of us found compelling reasons to drop by the main tent in midmorning for chickory coffee.) In the evening, just as at a proper art colony, the group would gather for dinner at the main tent, where art professor, group leader and chief cook Bob Riseling presided. We had started off the week on a high note, with seafood gumbo the first night; the second night we pulled pig. By midweek, however, Riseling was reduced to serving barbecued Spam and blackened hot dogs.

Occasionally, while Riseling cooked, instructor Richard Prillaman started a small driftwood fire nearby, packed a wooden frame with red, oily sand and led students through the steps of casting. Carefully they pushed a collection of shells, jawbones, fish fins and other treasures into the oily sand. Then Prillaman melted pewter scraps in a skillet over his fire and poured the mercurylike liquid into the mold. Once set, each casting was pried out of the sand, brushed off, washed in the gentle surf, then soaked in a bucket of mild acid solution for darkening.

Compass was a student creation; the assignment was to make a shrine dedicated to the island, using natural objects.

For a beach-loving birder, the week was a dream come true. I would wake up in the morning and look out the front of my tent toward the surf on the Gulf side of the island, then out through the back to the calm water of the Sound side and the Mississippi coast ten miles away. Then I'd poke my head out and look left over the flats and right over a pond, where redwing blackbirds buzzed and green-backed herons hunted. The only decision to be made was which way to walk that day.

Sometimes I went too far. I could tell when the sun on my head and the light coming off water and sand began to get to me. On the beach the scurrying of sanderlings would start to look like the scuttling of cockroaches; the loose white sand blown inland among the trees, its surface written upon by the tips of wind-bent grass stems, became snow.

But most of the time it was glorious. The only alligator I saw was not in one of the ponds but in the Sound, a hundred yards out. On the Gulf side, dolphins came in where little waves were breaking; the water was so shallow that the animals were stranded between waves. Some sights will stay with me forever. One day I was walking on the Gulf side, sun and wind at my back. The tide was going out, and waves were washing over sandbars, now exposed. Four great blue herons stood in that roiling water, surf fishing. Above them, ospreys wheeled; farther out, a line of pelicans was returning from a distant fishing ground.

It was no accident that Bob Riseling decided on Horn Island for these annual student expeditions. For one thing, friends in nearby Pascagoula, Moss Point, Gautier and Ocean Springs give him extraordinary help with the trips. One of them, Bill Nelson, first took Riseling to Horn Island 8 years ago. Nelson, a painter who lives in Moss Point, graduated from Memphis College of Art 11 years ago but, after living and working in San Francisco and other places with notable art scenes, decided he likes it best where he grew up. Since the trips began in 1985, Nelson, local fireman Michael Gray and others have arranged for boats, lodging for students heading home, even transportation to and from the airport for columnists.

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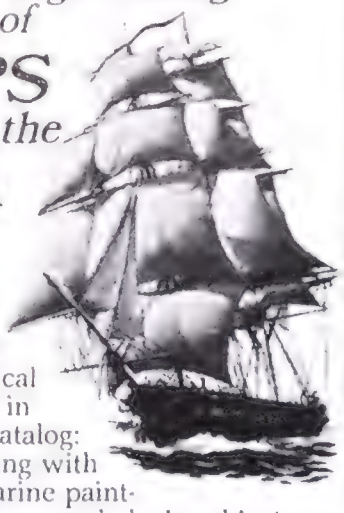

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But the specific appeal of Horn Island goes deeper. It is becoming a legend in the art world because of the work done there by an artist who died in 1965, Walter Anderson. A native of New Orleans and a graduate of the Pennsylvania Academy of Fine Arts, Anderson designed pottery for the family business, but he also excelled at wood carving; at wood and linoleum-block prints; at pure, unshaded line drawing. He is known for his illustrations of such works as the *Iliad* and *Don Quixote* (SMITHSONIAN, February 1977).

His lasting reputation, however, rests on the work he did on Horn Island. From 1950 until his death 15 years later, Anderson would row out there in a dangerously small skiff, his supplies packed in not-quite-waterproof garbage cans, and camp on the beach for weeks at a time. Using his overturned boat as a shelter, he subsisted largely on rice (which he shared with birds and rabbits) and coffee. He believed that to really see the natural world, he needed to immerse himself in it, letting as few creature comforts as possible come between him and that world. He crawled through the underbrush, climbed trees, waded bayous—always sketching, turning out thousands of watercolors on the reams of typewriter paper he brought with him. He wrote of halcyon days, of moments when it seemed the very forces of nature were materializing before him. He taught himself to see.

In 1950, Anderson wrote: "In speaking of a natural thing, most men assume a natural law. All things in nature are governed by this law. Man begins by saying, 'of course,' before any of his senses have a chance to come to his aid with wonder and surprise. The result is that he dies and his neighbors and his friends murmur with the wind, 'of course.'

"The love of bird or shell which might have restored his life flies away carried by the same wind which has destroyed him. The bird flies and in that fraction of a fraction of a second man and the bird are real. He is not only King he is man, he is not only man he is the only man and that is the only bird and every feather, every mark, every part of the pattern of its feathers is real and he, man, exists, and he is almost as wonderful as the thing he sees."

The art students I met were learning to see, too. And they felt the presence of Walter Anderson. Back on the mainland at week's end, they began the long return trip to Memphis. But they stopped in Ocean Springs, where Anderson had lived for most of his life. First they visited the community center; 40 years earlier, the artist had covered its walls with murals. One side depicts the area's human history; here, Indians and French explorers are prominent. The theme of the other side is natural history, an Eden of alligators and bears, of birds spiraling toward the sun, of herons and flying squirrels.

At Anderson's house, his last skiff is still tucked under the porch. Inside are his books and what is left of his carvings. Shelves in the back rooms are lined with the same beachcombing treasures the students had picked up. And there's the magical room—always locked during his lifetime—with murals on its four walls that document a day in the life of the wild creatures he observed.

The island had been a little overwhelming, as had been this artist's devotion to it. What we had learned, art students and hangers-on alike, was not so much about light and shadow on sand and water, or even about ghost crabs and black-bellied plovers—it was about learning to see. The students will be exhibiting their results in a show in Memphis this month. For me now, the results of Horn Island and Walter Anderson manifest themselves every time I go for a walk.

John P. Wiley jr.

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By Diane Raines Ward

In Anatolia, a massive dam project drowns traces of an ancient past

Archaeologists race to rescue the heritage of civilizations long gone as water menaces unexplored sites on the Tigris and Euphrates

On the western edge of the brown, rolling steppe of southeastern Turkey, the blue-green waters of the Euphrates surge into a giant reservoir behind one of the world's largest dams. It is named for the father of modern Turkey, Mustafa Kemal Ataturk. Upriver, two other big dams, the Keban and the Karakaya, stretch across deep river gorges in the southeastern flank of the Taurus Mountains. The once-quiet valleys resonate with a sizzling and crackling. It is electricity, coursing through power lines carried on lofty towers to far-off Anatolian towns.

These three dams are the first of 22 to be built on the Tigris and Euphrates river systems, as part of the Turkish government's Guneydogu Anadolu Projesi (Southeastern Anatolia Project), or GAP. The plan is to revitalize six Turkish provinces by transforming nearly 30,000 square miles of arid and semiarid land, an area larger than Belgium, Holland and Luxembourg combined, into the breadbasket of the Middle East. But it will do so at a fearful cultural cost. The first three dams alone are submerging hundreds of archaeological sites, many dating from prehistoric times.

This area played a pivotal role in the history of the Near and Middle East. Some of the world's earliest agricultural settlements were followed by splendid cities that arose along trade routes, their palaces and temples richly adorned with the work of sculptors, potters and metalsmiths. Now, the remnants of these great civilizations are to be obliterated.

Last fall I went to look at the two rivers and the landscape that is being so dramatically changed. Driving through rocky hills late one afternoon, a few miles upstream from the Ataturk Dam, I came to the imposing mound of Samsat, 160 feet high. Dominating the empty floodplain below, it is an accretion of cultures as diverse as Assyrians and Persians, Commagenians, Roman legionaries, the Abbasids of Aleppo, the Byzantines of Constantinople and finally the Seljuk Turks.

At one time Samsat was the capital of a small kingdom, Commagene, whose king Antiochus I built a tumulus with colossal statues of gods at the top of nearby Nemrut Dag. Later, when the city became an important Roman base poised at the border of the mighty Parthian empire, a population of 50,000 made it a metropolis in its day.

In the first century A.D. the Greek geographer Strabo wrote: "Commagene is a rather small country; and it has a city fortified by nature, Samosata, where the royal residency used to be; but it has now become a [Roman] province; and the city is surrounded by an

Ataturk is the world's fifth-largest rock-and-earth fill dam (at top); a power plant is being built (at center).

Photographs by Kay Chernush

Aliye Osten (left) uncovers Commagene mosaic at Samsat; it will be reassembled in Adiyaman Museum.

exceedingly fertile, though small territory. Here is now the bridge of the Euphrates. . . ."

Over that bridge centuries of trade and countless armies from all corners of the Near East coursed back and forth, from north, south, east and west, leaving fragmentary evidence of their passing. High on one side stood the walls of a medieval Seljuk villa. The remains of a Roman aqueduct, a broken line of arches and channels, dotted the parched landscape. Potsherds, blue and violet and emerald green, littered the ground, some a thousand years old, some still older.

At the foot of the mound were the dilapidated buildings of an abandoned modern village, its residents removed to Yeni Samsat (New Samsat), which will lie at the reservoir's shores. Shovels of earth were being heaved off the mound as archaeologists, aided by laborers from Yeni Samsat, worked frantically with pickaxes and wheelbarrows to salvage what they could. The team, which began to excavate in 1978, was led by one of Turkey's most prominent archaeologists, Prof. Nimet Ozguc.

"When they built the Keban Dam in 1974, everybody suddenly realized that the lower reaches of the Euphrates would be flooded," said 72-year-old Ozguc, whose gray hair and diminutive size belie her energy and determination. She had been excavating Acemhoyuk, an important Hittite site in central Anatolia, when Middle Eastern Technical University in Ankara decided to undertake a rescue excavation at Samsat and asked her to join them.

"I was very, very busy, but I accepted," she added, and immediately became enmeshed in the struggle to preserve the history of a city that until then had been minimally understood. "Only in this transitional area do the cultures of Mesopotamia and Anatolia come together. Samsat had a most distinguished role in the region's history."

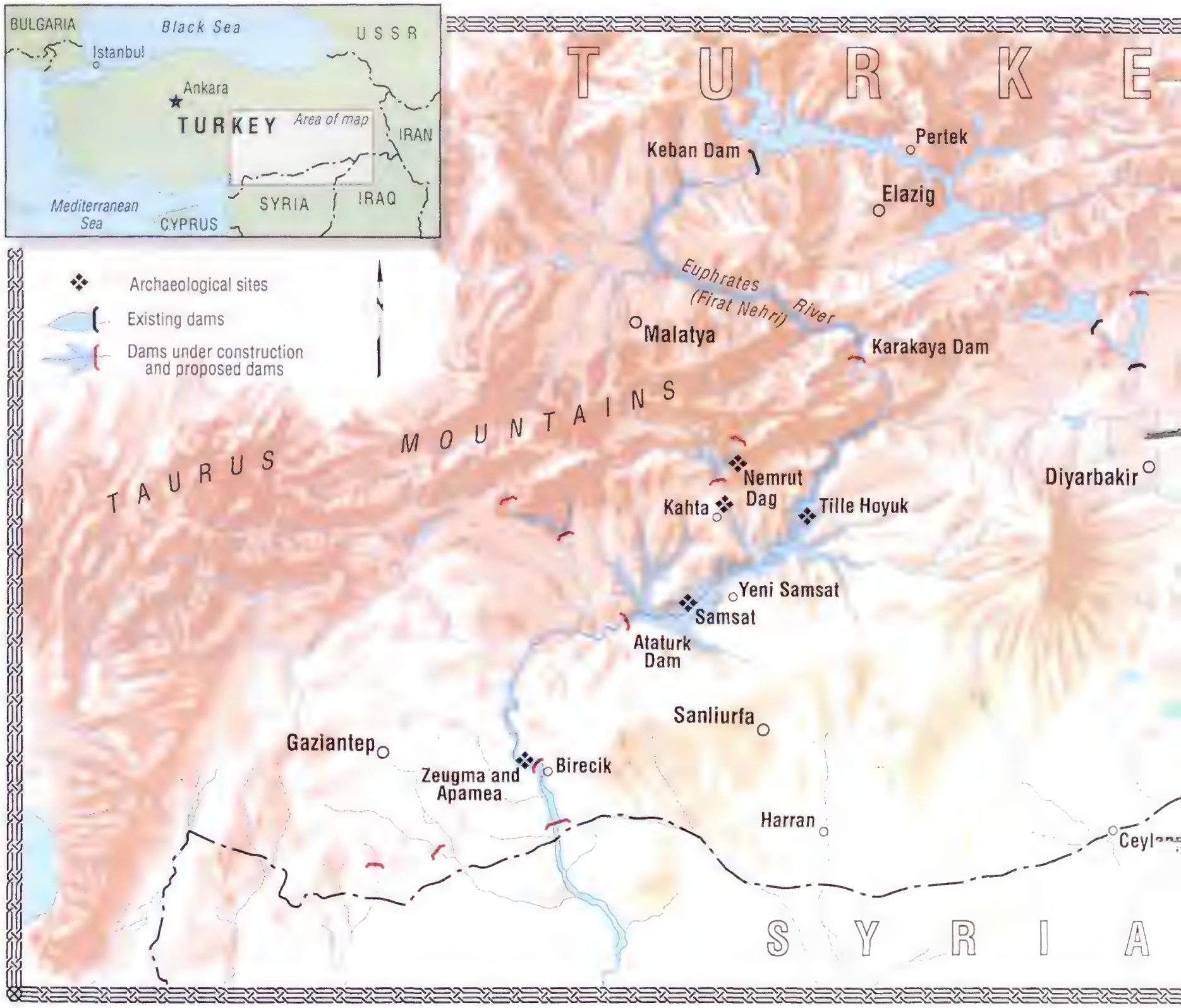
The team had managed to take one portion of Samsat's mound all the way down to its base on the plain below. "We found 29 levels, the deepest from the prehistoric Uruk period, around 3500 B.C. There were Roman walls, late Hittite walls, even remnants from the early Bronze Age," Ozguc marveled. Her most important finds were a sprawling system of fortifications and an enormous palace built in the first century B.C. by the proud Commagene king Mithradates I.

This small but apparently wealthy vassal state of republican Rome was famed for the warrior skills of its archers and horsemen, and for the craft of its ironworkers. Rulers were descended from Persian kings and Alexander the Great. Absorbing the traditions and religions of both cultures, they believed themselves gods, equals of Apollo and Zeus. Within their palace ruins was an altar for animal sacrifices, with a drain for blood. Wonderfully preserved mosaics of fishes, amphoras and plants, along with a wealth of frescoes and pottery, Ozguc removed to a nearby museum at Adiyaman.

"It would take at least 100 years to understand this place," she said. They have had only 11, and now are out of time; 1989 was their last season. I watched in disbelief one morning as workmen demolished Roman

Frieze against the sky, workers head home from Samsat; with shortage of skilled help, many locals were used.

Atop Samsat mound, ruins of tenth-century Seljuk villa hover above those of a first-century Roman palace, headquarters of Trajan and Hadrian in Parthian wars. Inoffensive-looking Euphrates (rear) now covers site.



Map of southeastern Anatolia shows the scope of GAP; insert of Turkey (top left) shows its location. Keban Dam, built in the 1970s, is fully operative; the Ataturk and Karakaya reservoirs are still filling.

walls, carrying large stones to the mound's edge and pitching them over the side. "To find Hittite, Uruk and Bronze Age walls, we must take out the Roman walls," explained Aliye Osten, a young archaeologist who is helping Ozguc oversee the dig. "Every day when I climb up to the top of Samsat and look at how much we have to rescue, my heart stops," Ozguc sighed. "But we are doing our best."

A few miles downstream, a fleet of 1,775 trucks, graders and bulldozers swarmed over the Ataturk Dam, sometimes working around the clock as the state hydraulics authority fought to meet its 1990 deadline. Blasted into rocky hills on each side of the Euphrates, the dam's enormous bulk—it is more than 6,000 feet long and 600 feet high—was daunting even against a backdrop of mountains. Workers were dwarfed by the earthmoving equipment, which itself seemed minuscule as it crawled along the dam's vast surfaces.

As many as 12,000 people have labored on-site to build the dam and power plant. An entire town, with schools, restaurants, a hotel and a blue-and-white mosque, was built to house them. The centerpiece of the GAP system, Ataturk will produce one-third of GAP's energy and irrigate more than half its lands.

Minister of State Kamran Inan is enthusiastic about the future. "These rivers have been here for millions of years," he explained. "We want to put the water to use, to benefit the children of this country. We are building a project for generations to come. I don't believe there is anything of greater urgency. Turkey is increasing by 1.3 million people every year. The requirements are enormous, but if intelligently used, our re-

Archaeological sites indicated are those discussed in the text; hundreds more are endangered.

sources are more than enough to cover these demands."

In its struggle to become an up-to-date industrial power, Turkey suffers from a host of ills: high inflation, a heavy burden of external debt, the pressure of a fast-growing population that is expected to reach 70 million by the year 2000. And the annual importation of more than $2 billion worth of oil for energy represents far too great a reliance on foreign nations.

For all its ills, Turkey has great potential. It alone, of all the dry lands of the Middle East and North Africa, has the resources to substantially increase its agricultural output. In harnessing the Euphrates' and the Tigris' bountiful waters for diversion to large tracts of the arable but semiarid land, the hope is to shift cropping patterns from millennia-old dry farming of wheat and barley to plantings that require extensive irrigation. Such crops as cotton, sugar beets and a variety of vegetables, fruits and cereals will not only supplement the national diet but will also be a major source of export.

"In the coming decades, the most important resource in the Middle East will be water," said Inan, "much more valuable than oil. And we are the rich possessor of that resource."

But diversion, present and future, has created a serious diplomatic situation between Turkey and her Arab neighbors. Syria and Iraq draw on the Euphrates and the Tigris for irrigation and hydroelectric power, and are concerned that the dams will reduce their share drastically. At the official ceremonies last January that marked the first stage of impoundment of Euphrates water in the Ataturk reservoir, Turgut Ozal, the President of Turkey, discounted these fears, saying: "Let no one suspect our intentions. We have taken into account the needs and concerns of our neighbors. We will never use the control of water to coerce or threaten them." However, doubts about the effect of impoundment were instrumental in the World Bank's withholding financing for GAP.

It is not only concern about the quantity of water Syria and Iraq will receive that worries them. Irrigation runoff from fields will flow back into the rivers, carrying fertilizer, pesticides and dissolved natural salts. Then, in addition to the irrigation that the dam's reservoirs will provide, Turkey is drilling tube wells and pumping water from the aquifer underlying the Harran Plain. In 1986 Turkey proposed a "peace pipeline" to carry potable water from Anatolia's Ceyhan and Seyhan rivers to its Arab neighbors. The costly program, which has not been implemented, was to be financed jointly by the three countries.

Earthquakes are another potential problem. Turkey is highly vulnerable, having had scores of quakes of varying magnitudes in this century alone. The planned site of the Keban Dam was shifted to remove it from a fault zone, and the Ataturk is said to have been designed to withstand stresses from an earthquake of magnitude 8 or greater on the Richter scale.

To better understand the potential impact of GAP, I drove south to the city of Sanliurfa, then on to the Harran Plain, one of the project's most important development areas. Once the northernmost extension of the Fertile Crescent, Harran is now a tiny village of a few dozen beehive-domed mud-brick houses clustered around the ruins of a medieval castle. It had been a magnificent city, a veritable trade emporium where routes from all over the ancient Near East con-

Diane Raines Ward writes about art, science and business from her home in New York. Her article on saffron appeared in SMITHSONIAN, *August 1988.*

One day, electric power lines from Karakaya Dam will carry nearly one-quarter of GAP's total output.

These behemoths, with seven-foot tires, will have hauled 110 million cubic yards of fill to Ataturk Dam.

verged, and a center for the worship of the Babylonian moon god Sin. A stone stela found at the site, and now at the Sanliurfa Museum, bears a long inscription in cuneiform. From it we learn the story of the last Neo-Babylonian ruler, the "mad king" Nabonidus, whose mother, Adda-Guppi, was from Harran. And the Bible tells us it was there that Abraham sojourned on his way to Canaan.

Standing on the highest point in Harran, I could see, stretching around the town in every direction, rectangular tracts of rich brown farmland, fertile but bone dry. With annual precipitation of less than 12 inches, some of this land yields just one crop every two years. Shepherds are hard put to find good graze for their sheep and goats. Villages on the plain, like others throughout the sparsely populated southeast, are small, scattered groupings of similar mud-brick houses. Many residents have long since drifted off in search of more-hospitable land with better prospects.

Not far from here, twin irrigation tunnels are being bored. They will carry water by gravity flow 33 miles from the Ataturk Reservoir to the city of Sanliurfa, to irrigate as much as 1.2 million acres of the lower-Euphrates plain around Harran and Ceylanpinar. Like everything else about the project, these tunnels are huge, big enough to allow graders and trucks to move about freely within.

Water will make the area green and productive, capable of yielding three crops a year where one has been barely possible. It should stimulate related industries such as food processing and textile manufacturing, stem the outflow of farmers and townspeople, and

attract new settlers. Sanliurfa is beginning to grow; its people are optimistic, as is everyone in the region. Miles of irrigation canals, some still being dug, stretch between Sanliurfa and Harran. Concrete water troughs, ready to be installed, lie all along the roadside and extend into field after field, as far as one can see. Even though the Sanliurfa tunnels and irrigation canals won't be completed for another few years, plastic piping can be bought in the mazelike alleys of Sanliurfa's covered bazaar. "This area will reach prosperity," Nimet Ozguc said softly. "No one can say 'Don't make this.' Not even though it will put my wonderful Samsat under the water."

While Turkey's government is working to bring prosperity to southeastern Anatolia, Turkish cultural institutions are fighting to save whatever they can from oblivion. Universities, museums and the Ministry of Culture have combined forces to learn what is endangered and what can be saved. When the Keban Dam was built, the stone blocks of two handsome tenth-century Seljuk mosques were meticulously numbered, disassembled, then put back together on higher ground in the town of Pertek, where the faithful now come daily to pray.

From repository to treasure house

Local museums, once sleepy repositories for a handful of disparate relics, have become militant. Aiding with surveys and salvage excavations, they are bursting with rescued treasures. The Sanliurfa Museum helped excavate several ancient tomb sites and now houses a rich collection of unique sculpted pieces from the Neolithic, and ceramics, metal tools, stone implements and seals spanning civilizations from the Chalcolithic, the Bronze and Iron ages, and medieval times.

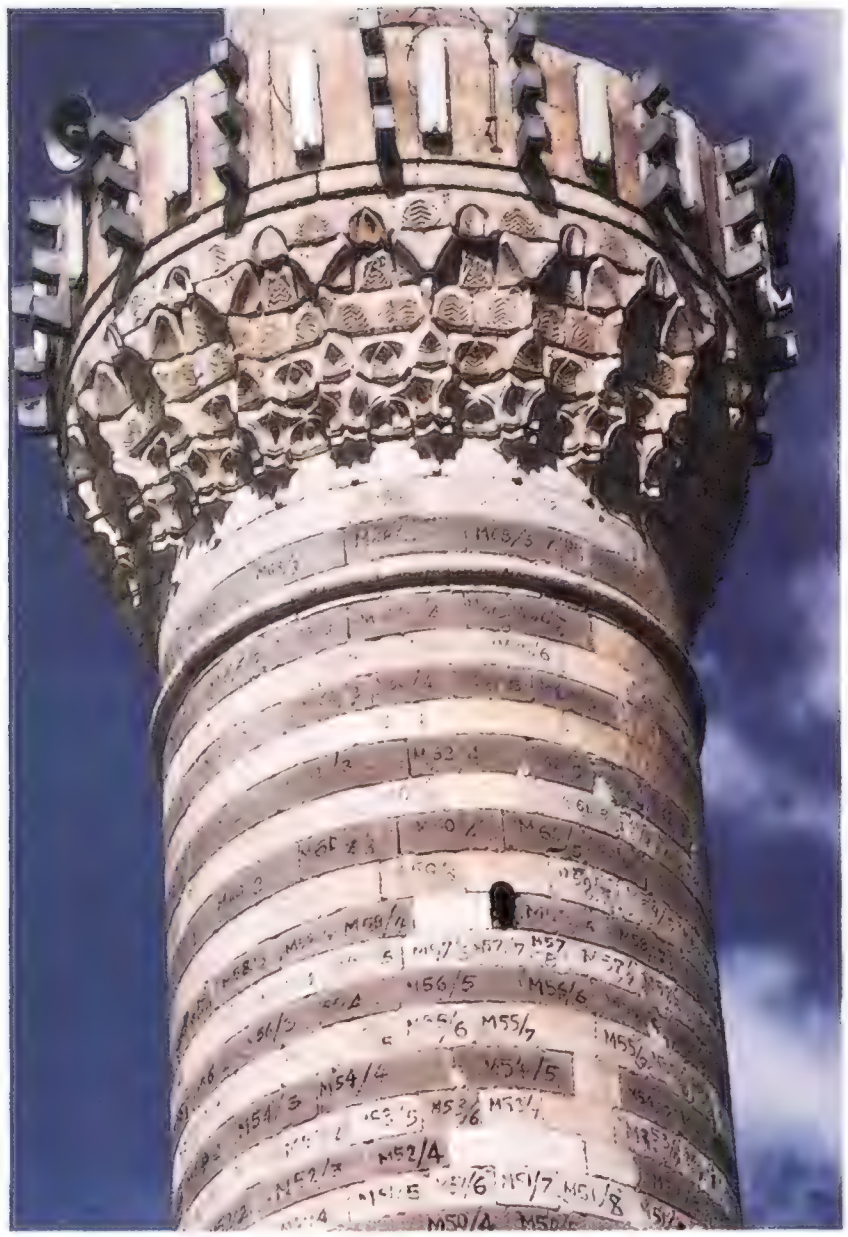
Rescue operations may have gained a little time from the new, comprehensive GAP master plan, commissioned by the Turkish government, which recommends that efforts be concentrated on projects now in progress before new ones are started. So far there has been little coordination between the Ministry of Public Works and Settlements, builder of the dams, and the Ministry of Culture, scrambling to help universities retrieve whatever they can. It is Ozguc's hope the archaeologists can work more closely with both groups. "We *must* plan with the engineering staff from the beginning," she insisted. "Working together, we archaeologists could point out the importance of each site, so the engineers, where possible, could shift water flow away from those of special significance."

Turkey is so rich in unexplored sites that every time a dam goes up, chances are something important will be destroyed. "Frankly, we don't know what's between the rivers," I was told by archaeologist Guillermo

Irrigation will bring development to Harran, where mud-brick houses are little changed from biblical days.

Sanliurfa tunnel and its twin will carry water 33 miles to irrigate 1.2 million acres of farmland.

On fertile Harran Plain, agricultural trials presage up to three harvests annually when the waters come.



At Pertek, elaborate decoration on Seljuk minaret is odd contrast to numbered bricks that aided reassembly.

Algaze, a research associate at both the Smithsonian Institution and the University of Chicago's Oriental Institute. An enthusiastic young scholar, Algaze singlehandedly mounted a campaign, backed by the Smithsonian and other U.S. institutions, to take a survey team to southeastern Anatolia. Work has gone on for the past two years in areas where new dams are being built, and Algaze has identified hundreds of sites that will be inundated or destroyed, ranging from scatterings of Paleolithic flint to 16th-century Ottoman towns.

His work has taken him into roadless and remote areas where no archaeological survey has ever been done, especially along the Tigris. Occasionally, the sole access has been by boat. For centuries that river served as the eastern frontier of both the Roman and the Byzantine empires, a role reflected in the number of Roman military installations along its course. The most important of them occupies both banks of the Tigris some eight miles upstream from Cizre. Here are ruins of the Roman frontier outpost of Bezabde, with a large fortified castle that once may have housed a Roman legion. On a nearby ravine stands the badly defaced but still recognizable relief of a local Parthian ruler and his queen, mute witnesses to earlier inhabitants of the outpost.

As elsewhere, until dam construction began in the 1970s, there had been very little archaeological exploration. Algaze admits ruefully, "The dams are a great boon to our understanding of the cultural development of the region, wonderful and terrible at the same time." Five more are either under construction or scheduled to be started soon. Since it takes years to build each one, there is time to save a great deal, and Algaze hopes for an international rescue effort. "Developments fundamental to the history of the ancient Near East as a whole took place in these areas," he remarked. "Important cultural information will be lost forever if it is not recovered now."

An exceptional third-century Roman bridge

Ozguc and other archaeologists are also looking hard at what should be done next. The stately, pillared, third-century Cendere Bridge north of Kahta, bearing inscriptions about Emperor Lucius Septimius Severus and his family, could be endangered. Engineers are not sure precisely how high the waters will rise. "If it is to be flooded, it will be moved very carefully," Ozguc said. "It is an exceptional Roman bridge. But I hope it can stay in its own place."

Of comparable importance and similarly threatened is the great classical site of Zeugma-Apamea, in Roman times the most important Euphrates crossing. Just upstream from the modern town of Birecik, it is a few hundred yards from the site where another new dam is to be built and will be the subject of another last-ditch rescue effort.

Turkey's Ministry of Culture, with 60 excavations under way throughout Anatolia, welcomes help from abroad. German, Dutch, French and American institutions have sponsored expeditions. But the task is unprecedented and only 12 of more than 200 endangered sites identified in 1977 by Prof. Mehmet Ozdogan of Middle Eastern Technical University have been excavated. Since 1978 the British Institute of Archaeology at Ankara has been working at Tille Hoyuk, an imposing site that guarded a Euphrates crossing on what was once a major east-west route 45 miles upstream from Ozguc's Samsat.

Under the direction of David French, the British team has stripped the entire top of the mound and is removing Iron Age levels from the eighth and ninth centuries B.C. An intact Assyrian courtyard paved with alternating squares of black and white pebbles has been stored in 250 bags in the Adiyaman Museum, awaiting reassembly. The summer of 1990 may be their

last season of work; floodwaters are advancing on Tille. "It's very easy to think of archaeology as the retrieval of objects rather than the retrieval of information," explained Stuart Blaylock, one of the team's coordinators. "But in terms of what we find, the architecture, the plan and the structural sequence of the site are as important to us as the objects that come out of it. A wide range of sites is being excavated in this area, both in terms of size and chronological span. The end result will be a good understanding of the cultural and material history, along with the archaeology, of this stretch of the Euphrates."

It would take decades to explore thoroughly multilevel sites like Zeugma-Apamea, Tille or Hasankeyf. Stretching along the eastern bank of the Tigris not far from the modern rail and agricultural center of Diyarbakir, Hasankeyf is another once-mighty city standing in the way of another mighty dam. The river's blue waters swirl around carved pillars of a medieval bridge said to have been at one time the world's biggest. Behind them the city rises, its minarets and arches, cave entrances and castle walls dusty and golden in the blazing sun.

A laboratory of architectural history

"You see here the meeting of many different cultures, habits and architectural traditions," Olus Arik averred. He is a compact, animated professor of archaeology and art history at the University of Ankara. "It is marvelous! A laboratory of architectural history." Arik has become the passionate voice of Hasankeyf in much the same way that Nimet Ozguc became the champion of her beloved Samsat: by default. "It was not my aim to take Hasankeyf as my first-priority project," he said. "But I learned that the Ilisu Dam would destroy it." Arik mustered $100 and a handful of friends and rushed to the site. "What you can save, you must. It could be one cup or a ceramic vessel, but we were determined to rescue what we could."

The Ilisu Dam, designed to produce only hydroelectric power, will wipe out Hasankeyf. From the time the first earthmovers arrive, Arik and his group will have just nine more years. A site larger than Ephesus, its excavation will be nowhere near finished when the waters rise.

Hasankeyf's central role in the history of this land is only beginning to be understood, but its colorful and varied past dates from the first millennium B.C. "We know from the accounts of travelers that it was a legendary center," Arik affirmed.

By the 12th century the Seljuks, whose Islamic empire extended throughout much of Asia Minor, had annexed the area around Hasankeyf. Their reign there marked a time of affluence and religious and racial harmony. Hasankeyf became the capital of a Seljuk vassal state whose benevolent prince Kara Arslan (Black Lion) is said to have built the mighty bridge across the Tigris in 1114. "It was a marvel of the medieval world," according to Arik, "and made possible extensive traffic between Turkey and northern Mesopotamia."

During years of political upheaval, the Silk Road to China (SMITHSONIAN, April 1982) had fallen into disuse in this area. But the Seljuk sultans restored commerce by reimbursing merchants and travelers for any losses at the hands of bandits. "The road became an international transit route again," continued Arik, who loves spinning out the story of this place. "It was a time of prosperity, the happiest days of the 12th century, and Hasankeyf became a huge city, with as many as 100,000 people." Eventually, perhaps by the middle of the 17th century, the bridge collapsed. "Until that time we can find many sources that mention Hasankeyf. Then, nothing," he said.

Now there are only a few thousand inhabitants. In

Atop remnants of Iron Age wall, member of British team at Tille records data; in foreground, clay sherds.

Three animated figures seem to cavort on Neolithic carving, perhaps an idol, found by Sanliurfa Museum.

The museum also contains skeleton of an early Bronze Age adult female; crouched fetal position was typical.

Detail of beautifully reticulated Roman wall that was at Samsat. Dressed stones were imbedded in mortar.

the late 1960s the government built a new bridge, and the road is again a transit route, especially between Iraqi oil fields and Turkish refineries in Batman. A steady stream of tank trucks bearing the inscription *Tehlikeli Madde* (Dangerous Material) shares the road with horse carts.

The townspeople live around and in 2,000 years of ruins. Grocers, butchers and woodworkers occupy shops in what was once a Roman marketplace, where an old man showed me a coin bearing the head of a Roman emperor. Old and new houses are jumbled together and abut ancient buildings, making Hasankeyf seem a place out of time. Families still live in the centuries-old cave homes eroded from and carved into the rocky cliff face. The caves are cool in summer, when the heat outside nears 100 degrees F, and warm in the cool winters.

I could hear the voices of children playing on the hillside above the town, running up and down stony paths, surefooted as mountain goats. Two old men led a small donkey down the hill. Chickens and cows occupied separate caves that served as barns and sheds. As I climbed a path up the rocky hill, two little boys, perhaps 4 and 5, ran down and shyly took my hands to escort me to their house at the top of the path. Their family had created a pleasant home, using stones from the old citadel. It sported glass windows with brilliant blue frames, and a pot of flowers adorned the sill.

Mosques, mausoleums and caves

Only from the hilltop is it possible to understand the original scale of this city. Scattered landmarks tell the tale—stone mosques in the center, mausoleums along the Tigris to the west, another cave settlement across the river. The scope of Olus Arik's undertaking becomes clear. It seems unthinkable that water should be allowed to engulf this beautiful place.

"We must learn what this city was in the Middle Ages," Arik insisted. "The first possibility is to fight the project. This dam has no irrigation systems; it is for electricity only. After 70 years, I am told, it will no longer function because of silt buildup. A cultural center such as this should not be sacrificed for 70 years of electricity.

"Of course I am thinking in a fanatical way," he admitted. "I *am* a fanatic of my profession, of archaeology. For the sake of a few million kilowatts of electricity, we will lose a center of 2,000 years of culture."

If the dam cannot be stopped altogether, Arik suggested that Ilisu be located farther from the city, or at least modified in size. At any rate, dig he must, and quickly. "We cannot wait. We have to think as if they have already pushed the button and see what we can do in nine years. Normally, such a huge site would take

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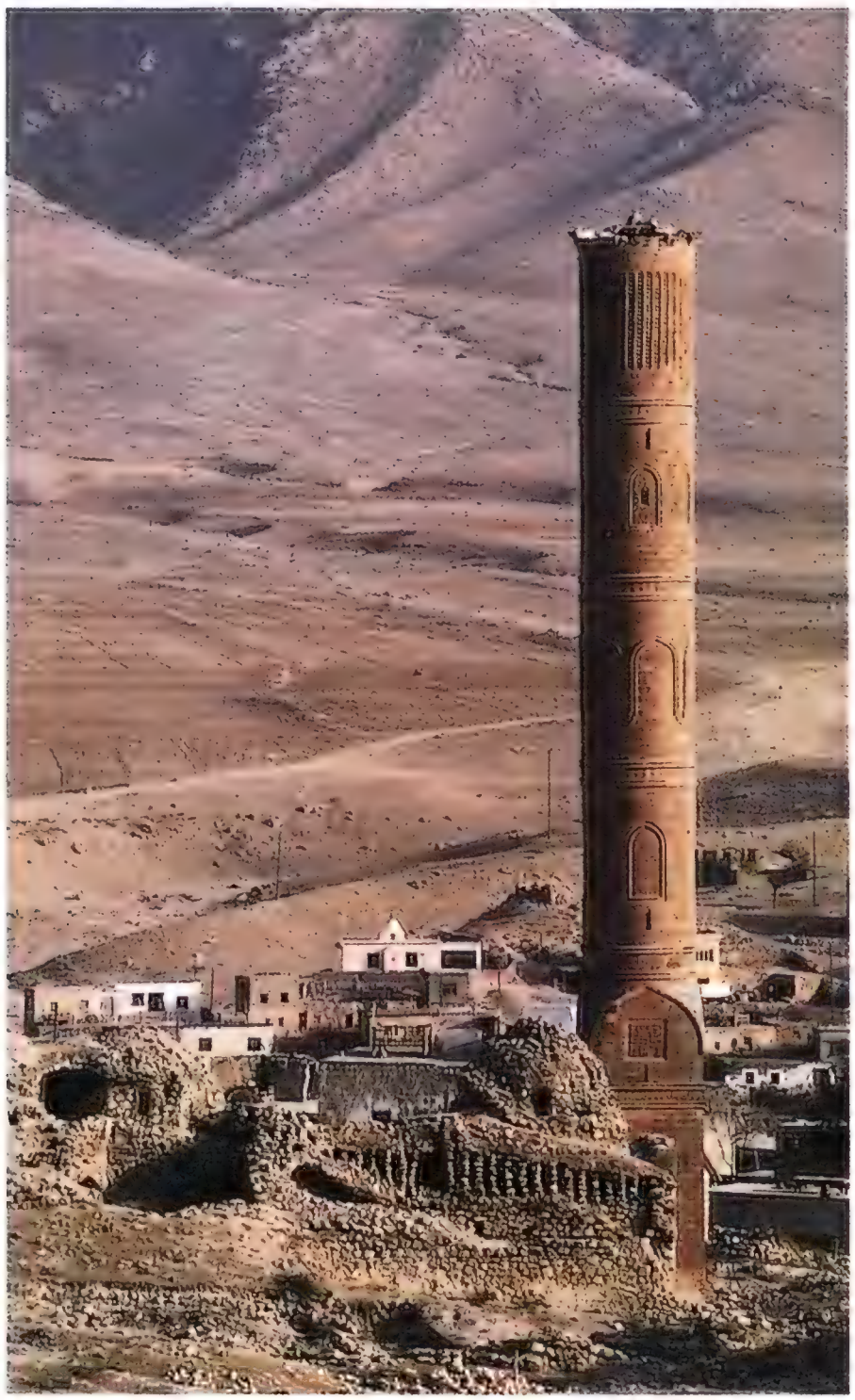

Hasankeyf's Suleyman Mosque, with austere relief on minaret, may date from 12th century, it faces flooding.

a minimum of a hundred years to explore thoroughly."

Hasankeyf looks fragile in the morning sun. The weight of its past rests lightly and gracefully on stone streets and on the towerlike pillars of the elegant old bridge, but they cannot possibly withstand the waters of Ilisu's reservoir.

Arik and his partner Metin Ahumbay have the help of a support group from Istanbul Technical University. Since professors can work only between school terms, the team has had to dig in the searing heat of southeastern Anatolia's summers. Arik is desperately seeking help for this enormous undertaking—manpower, financial support or collaboration with a foreign university or institution.

"We must make a huge effort to excavate and transport at least the decorative pieces," Arik went on. "The stucco and stone reliefs, ceramics and buildings, minarets, portals, fountains. Pieces of the palace and the great mosque and churches that were constructed of blocks of stone without cement—they are an architecture of surfaces. These we can move. But medieval architecture progressed to paint, mortar, tiles and cement. It is an architecture of shape, volume and plasticity, almost an organic creature. You must keep these things in their place. If it's covered with tiles, it is marvelous, but you cannot transport it."

The newly lighted villages of the southeast are reminders of what the dams have already done for this land. Just a few years ago only half of Anatolia's villages had electricity. Now only a few are without it. High-tension towers invade even the most remote landscapes. GAP will increase Turkey's hydroelectric-generating capacity by around 70 percent. The demand for energy increases yearly, so even though there was a sizable surplus in 1989, enabling electricity to be sold outside the country, the dams keep going up.

The ruins of Hasankeyf symbolize what can be lost unless proper care is taken. The site's plight is painful for everyone concerned. Turkey's Ministry of Culture has struggled to find extra funds for Arik's excavations, but can give only a small amount. This year Arik's government funding reached a pitiful all-time high of $2,000. Nevertheless, he believes the crisis is gradually receiving recognition. The master plan, if adopted, could put off the building of Ilisu for a few years—a tiny reprieve. But there have been positive indications that the government wants to find a way to save the site. Meanwhile, Olus Arik refuses to move any of his finds to a museum. "I still have hope," he says, "that we will save this city in its original place."

A graceful arch testifies to the esthetic importance of Hasankeyf's historic bridge; Ilisu will demolish it.

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By Daniel Stashower

A dreamer who made us fall in love with the future

Before there was Star Wars *or even* Star Trek, *Hugo Gernsback melded fact and fantasy into an inspired hybrid he called 'science fiction'*

Visionary young publisher, up-and-coming at 30, was staking career on tales of Mars and moon landings.

In 1910, when my grandmother was 7 years old, Hugo Gernsback would come to the house and make alarming predictions about that newfangled device, the telephone. My grandmother was then living on Central Avenue in Cleveland, and Gernsback, a favorite cousin, often stopped off on his train trips from New York to Chicago, where he went to purchase radio equipment for his electrical parts company.

Gernsback had not yet attained fame as the father of science fiction—largely because he had not yet coined the term "science fiction"—but already he had cultivated a certain imaginative flair. A lean, dapper man who favored expensive suits and bright silk ties, Hugo would arrive with a giant box of Schrafft's chocolates tucked under his arm and spin out wild tales of the future and the marvels it would bring. Robot doctors, retirement colonies on Mars, domed cities orbiting Earth—all of these, he insisted, were just around the corner. If a ringing telephone interrupted one of his stories, he invariably raised a finger of caution at my grandmother. "Hildegarde," he admonished in his thick German accent, "fix your hair. It won't be long before the caller can see your face over the telephone wires."

Then as now, the prospect of a seeing telephone was an appalling one for my grandmother, who believes that her plain old rotary phone is intrusive enough. Nevertheless, Hugo's prescience left a powerful impression, as did the gentle warning he gave at the end of each visit. "In Europe you have 64 first cousins, Hildegarde. You should be grateful we didn't *all* come to America."

For all of his seemingly preposterous ideas, Gernsback was something more than an oddball relative and would-be teleconferencer. I had often heard of his prominence in the world of science fiction—the prestigious Hugo Awards (given annually for the best sci-fi books, films et al.) are named in his honor—but that proved only the beginning. Hugo took on careers the way other people try on hats. A little digging revealed that he had been, among other things, an author, inventor, scientific prophet, magazine publisher and broadcast pioneer. The only constant was Hugo Gernsback himself, a commodity he nurtured and promoted with uncommon skill. Everyone I approached had a strong opinion of the man. To some, he was a visionary, an impresario of the future. Others dismissed him as a crackpot, and a rather annoying one at that. All agreed that he had an extraordinary, if undisciplined, mind. "It became sort of a joke with him," one of his friends told me. "He had a sign in his office that said 'If You're So Smart, Why Aren't You Rich?' "

One reason was that he had been born too soon, and perhaps on the wrong planet. Early photographs show a dark and intense young man whose thoughts are clearly hovering near some distant world. Happily,

Gernsback-empire magazines, such as *Amazing Stories*, touted their creator's obsession: allure of technology.

Science fiction's eccentric sire

Ralph, punningly christened 124C, "one to foresee," dials up his earthbound fiancée from inside spaceship.

distant worlds became his stock-in-trade when, in 1926, Gernsback pioneered a magazine called *Amazing Stories*, the world's first science fiction journal.

Originally billed as the "Magazine of Scientifiction," *Amazing Stories* was to be Gernsback's personal gateway to the future. In a cramped office on lower Fifth Avenue, he and his staff worked from early morning to late night, agonizing over the details of launchpads and disintegrator guns with an intensity that lesser men reserve for sales charts and stock options. Dog-eared manuscripts lay in piles on the floor, glorious four-color illustrations of satellites and spaceships littered every surface, and at the center of it all sat Gernsback—collar neatly fastened, suit coat buttoned—scrawling away in an outsize, florid hand.

"*Amazing Stories* is a *new* kind of fiction magazine!" Gernsback wrote in his inaugural editorial. "It is entirely new—entirely different." (He wouldn't come up with the term "science fiction" for a few years yet.) Each story, he promised, would offer "charming romance intermingled with scientific fact and prophetic vision. . . . Posterity will point to them as having blazed a new trail, not only in literature . . . but in progress."

A generation of American boys cared little for such promises. They wanted a good yarn, and Gernsback, the courtly immigrant from Luxembourg, gave it to them. All across the country, thousands of young dreamers, destined for careers as scientists or writers or space engineers, huddled beneath their covers late at night, poring over the pages of the magazine by flashlight, lost in a world of rugged space travelers, gleaming rocket ships and perpetually endangered heroines. One of those youngsters, entranced by *Amazing Stories* decades before the arrival of *Star Trek* or *E.T.*, was writer Ray Bradbury. "Gernsback," says one of science fiction's premier practitioners, "made us fall in love with the future."

Above all, a passion for accuracy

Amazing Stories was indeed to be far more than an adolescent fantasy. Gernsback fervently believed that science fiction would anticipate, and even help to bring about, many of the wonders of the future. Consequently, he insisted on scientific accuracy in the stories he printed. When writing about a trip to Saturn, for instance, he would linger over every detail, from a rocket launcher made of magnetic rings to the space sickness that plagued his otherwise hardy adventurers. "There can be no progress without prediction," he wrote. "No matter how fantastic the device may appear, there is no telling when it will attain reality."

Gernsback tossed out predictions as if scattering birdseed, occasionally pausing to elaborate with glossy illustrations. In an essay called "The Electronic Doc-

Baron Münchhausen, appropriated as sci-fi character, entranced readers with his exploits on planet Mars.

"Male Martian, over 10 feet tall" was depicted by Hugo's longtime collaborator, artist Frank R. Paul.

tor," he imagined a stream of patients whizzing along on conveyor belts past an array of diagnostic machines. "Hurricane Killer" outlined a plan to thwart the tropical whirlwinds with "napalm-magnesium" bombs. "Within seconds," he wrote, "a curtain of fire rises to the sky, engulfing a fair amount of hurricane air and diverting it." "Mating Service of the Future" held out the promise of error-free matchmaking, thanks to an "electronic brain" that analyzed the course of true love in advance.

Electronic gadgets of all kinds had fascinated Gernsback from boyhood. For his 6th birthday, he received an electric bell, some wire and a battery set. When properly hooked up, the ringing bell spewed out a shower of "wonderful green sparks" that held young Hugo spellbound. Electronics remained a lifelong interest. One of Gernsback's earliest ventures, after his immigration to the United States in 1904, was to launch a device he called the Telimco Wireless, "America's first home radio set." Because commercial radio was as yet unknown, the Telimco kits featured two units—one for receiving and the other for transmitting. Radio enthusiasts could use the transmitter to ring a bell on the receiver, even when the two units were a mile apart. "That's about all it did," recalls one customer. "People just rang a lot of bells." Nevertheless, the Telimco set became a hot item, a brisk seller at $7.50 for Macy's, Gimbels and Marshall Field's.

The start of World War I doomed this promising enterprise, when the U.S. Government banned all amateur radio transmissions in an effort to thwart spies. Gernsback was stuck with more than $100,000 worth of useless parts. His solution, though desperate, showed him at his inventive best. He repackaged the wireless parts as electrical experimenter sets for boys. The instruction manual trumpeted such projects as "How to Make an Electric Fish." Profits quadrupled.

But before the war Hugo had set his entrepreneurial sights on publishing, a decision that would lead, indi-

Daniel Stashower, based in Alexandria, Virginia, has published two novels, The Adventure of the Ectoplasmic Man *and* Elephants in the Distance.

rectly, to the birth of modern science fiction. In 1908 he decided to launch the world's first radio magazine, *Modern Electrics*, in the hope of introducing the public to the coming marvels of science and electronics. The first issue, selling for 10 cents and covering such topics as "How to Make an Electric Whistle" and "Electrical Patents of the Month," was an immediate hit. While putting the latest issue to bed one night in April 1911, Gernsback found himself with a few empty pages. With no other material on hand, he sat down and cranked out some filler—a piece of fiction set in the distant future. It was called *Ralph 124C 41+*.

The story, subtitled *A Romance of the Year 2660*, chronicled the adventures of Ralph, one of only ten superior Earth beings permitted to wear a plus sign attached to his number name. As the action begins, Ralph rescues the beautiful Alice 212B 423 from a deadly avalanche, using an ultrapower transmitter of his own design to melt the snow. But readers were left hanging as to Alice's fate, because Gernsback simply stopped writing when he had filled the space. In the next 11 issues, he spun out the story, often waiting until the last possible moment to compose the next installment. Later episodes saw Alice kidnapped by a jealous Martian, with Ralph piloting a sleek "space flyer" in hot pursuit.

This was decidedly unusual fare for an electronics magazine, but Gernsback's readers responded with enthusiasm. As sales climbed, he began running more and more science fiction. By the time *Ralph 124C 41+* was reprinted in book form in 1925, his publishing career had taken an entirely new direction.

"Bang! Bang! Bang! Three shots. . . ."

Without question, Gernsback's novel stands as a milestone of science fiction, though its charms remain somewhat elusive. Gernsback could be an uncommonly wooden writer—"Bang! Bang! Bang! Three shots rang out! Each more horrible than the last!"—but his plodding prose and plots are almost beside the point. The true purpose of *Ralph 124C 41+* is suggested by the title's numerical pun: Ralph, the "one plus," looks to the future; he is "one to foresee."

For all of Ralph's interstellar derring-do, the story merely serves as a showcase for the author's scientific predictions. Each time Ralph hails an "aerocab" or beams his thoughts onto paper with his "menograph," the reader can sense Gernsback chuckling in the background. Ralph doesn't simply pick up a newspaper, for instance; Gernsback devotes three full pages to the process of inserting a transparent, flexible square of celluloid into a powerful projector. "Microfiche" is not a Gernsback coinage, but as with so many other things, he saw it coming. Skywriting, tape recorders, solar power, holograms, fax machines, even aluminum foil—

Self-propelled Skylark of Space, an *Amazing Stories* character, influenced creator of Buck Rogers comics.

all are part of Ralph's daily life, however foreign they may have seemed in 1911. The parade of technology made for rather numbing fiction, but the scope of the author's imagination remains breathtaking today.

Easily the most impressive of Gernsback's forecasts occurs when Ralph employs a "parabolic wave reflector" to locate his Martian quarry—the process is now familiar as radar. Gernsback describes the reflection of the pulsing waves with uncanny foresight and even includes a helpful diagram of the apparatus. "From the intensity and the elapsed time of the reflected impulses," he concludes, "the distance between the Earth and the flyer is then accurately calculated."

Decades later, when radar had become a reality, Gernsback did not recall his prediction. When friends brought the matter to his attention, however, he could not resist putting out a pamphlet to document his achievement. According to Sam Moskowitz, Gernsback's close friend and co-worker, no one was more surprised by the prophecy than Sir Robert Watson-Watt, whose role in the development of radar technology had made him a hero during the Battle of Britain (SMITHSONIAN, July 1990). Moskowitz recalls that the British physicist presented himself at the offices of Gernsback Publications in the late 1940s, demanding to see the proof of Gernsback's forecast. "He stormed out after he saw it," Moskowitz reports. At a later meeting Watson-Watt apparently felt more conciliatory. When Gernsback avowed Sir Robert was "the inventor of the actuality of radar," the British scientist reflected the words back: "*You* are the inventor."

Another lifetime preoccupation, a favorite location in Gernsback's geography of the mind, was Mars. As a boy, Hugo had stumbled across a book on the red

Lavish creations, outlandish but firmly grounded in technology, never failed to hook thousands of readers.

From left: astronauts' space walk, airship laser wars, robot hordes running amok, waterspout-busting vessel.

planet by the American astronomer Percival Lowell. The volume suggested, among other things, that alien worlds might support intelligent life. The notion had a profound effect on the 10-year-old Hugo: he promptly fell into a delirium. For two days he thrashed about in the throes of a brain fever while his doctor hovered anxiously at his bedside. All the while, he babbled wildly about Martians and their weird inventions. Hugo soon recovered from his fever. The Martians, as it turned out, would be with him for some time.

"Chances overwhelmingly favor the existence of life on Mars either past or present," Gernsback told his readers in 1924. In another article, entitled "How I Would Speak to Mars," he envisioned a system of 1,000 arc lamps arrayed on a mountaintop, so as to be visible to the Martians; voice or music messages would be transmitted to them over the beams of light. "It is possible," he added hopefully, "that even today the Martians are using such a system to signal us."

Still, for a man who may have believed in Martians, Gernsback had little trouble gaining the respect of the most prominent scientists of the century—including Guglielmo Marconi, Nikola Tesla, Robert Goddard and David Sarnoff. Gernsback even caught the ear of Thomas Edison and spent a happy afternoon at the inventor's laboratory in West Orange, New Jersey, grilling the elderly scientist about volcanic heat and cities of the future. The interview ended only when an assistant began casting meaningful glances at his watch.

Gernsback himself lacked the temperament of a serious scientist. Impressive concepts, such as radar, came easily, but he was far too restless to develop these inspirations. In his magazines, he could better indulge his hit-and-run style of brainstorming. Durable titles such as *Science & Invention* and *Radio News* proved a little too confining. With his science fiction titles, he could pull out all the stops, unhampered by such trifles as the limits of contemporary technology.

Even so, Gernsback had to rely on reprints of Jules Verne, H. G. Wells and Edgar Allan Poe for the first issue of *Amazing Stories*, because the genre had not yet generated much in the way of new fiction. In fact, the title page featured an illustration of Verne rising from the grave. Gernsback had happened along at a moment when science fiction stood at a crossroads. Better writers, better editors and better publishers would soon appear, but he had set the ball rolling. He quite literally defined the genre.

In the earliest days, Gernsback had been extraordinarily lucky in finding a young artist named Frank R. Paul, an Austrian immigrant whose passion for scientific accuracy rivaled his own. Paul, who had trained as an architect, helped to shape the magazine into exactly the sort of futuristic blueprint that Gernsback wanted. The two conferred on every detail, no matter how trivial. What sort of shoes would a spaceman wear for his walk in space? Would not that type of helmet fastener cause, perhaps, his head to explode?

Ironically, this insistence on putting science into science fiction brought Gernsback a barrage of criticism over the years. From the beginning, detractors accused him of stressing technology at the expense of literary merit, a syndrome known in the trade as the "Gernsback Delusion." The genre's leading lights, however, have been more gracious. Arthur C. Clarke, creator of *2001: A Space Odyssey*, fondly acknowledges Gernsback as a major influence. Clarke's book *Profiles of the Future* includes a dedication "to Hugo Gernsback—

who thought of everything." Isaac Asimov, author of dozens of science fiction titles, shares this estimation. "I consider him the father of science fiction," Asimov says. "He made it possible to develop a mass market and for many youngsters (like myself) to write science fiction."

From the start, Gernsback cultivated a pool of young talent and lured such established authors as Edgar Rice Burroughs and H. P. Lovecraft into the fold. Neither writer stayed long, as Gernsback sometimes had trouble locating his checkbook. Lovecraft took to calling him "Hugo the Rat." Nevertheless, the Gernsback empire flourished—eventually, he would publish more than 50 magazines.

Even as *Amazing Stories* reached its peak, Gernsback still found time to experiment with new gadgets. A particular favorite—one that had been on the back burner for some time—was known as the "scanning televisor." It would soon become more familiar as "television"; Gernsback had first used the term in 1909, and is sometimes credited with coining the word, though he himself claimed only to have popularized it. In 1928, a good 20 years too soon, he brought out his first TV magazine, *All About Television*. Even Gernsback could not have appreciated the remarkable accuracy of the cover, which showed a family of the future gathered around the set to enjoy a football game.

Tirelessly inventive into his 80s, Gernsback models Watchman prototype for *Life* magazine portrait, 1963.

Gernsback had founded radio station WRNY, located in New York's Roosevelt Hotel, in 1925. Three years later, the station began one of the world's first regular television broadcasts. With the help of John Geloso, later a successful TV manufacturer, Hugo enabled the readers of *Radio News* to take part in his most ambitious experiment. Gernsback had encouraged his readers to construct their own television sets, following elaborate blueprints reproduced in the magazine. With a number of critical components still many years off, the sets instead featured a motor, a neon glow lamp and a 24-inch scanner disk that whirled at 450 revolutions per minute. When synchronized with the scanner at WRNY's studio, the home set could provide clear moving images, similar to the newspaper halftones of the day. Viewers had to sit close to see them on their homemade sets, though, as the screen was only slightly larger than a postage stamp.

Early technology did not permit the simultaneous transmission of picture and sound over one channel, so Gernsback alternated between the two. A radio broadcast of a violin concert, for instance, preceded a televised image of the performer. Regular programming—on the handful of amateur sets—began on August 21, 1928, complete with listings in the *New York Times*. The very first day offered a fitness show, a cooking demonstration and several concerts. Not surprisingly, a lecture by Hugo Gernsback was featured prominently.

In an instant, a life's work gone

Gernsback lost a small fortune on his TV-radio station, but business acumen had never been one of his talents. Still, it came as a great surprise to everyone—particularly Gernsback—when he went broke in 1929. He awoke one February morning to find that a competitor had seized on a legal quirk to force him into bankruptcy. At a stroke he lost everything, including his beloved *Amazing Stories*. True to form, Hugo was up and running again within two months. When he announced his intention to form a new publishing company, 8,000 subscription orders cascaded in. In no time at all, a fresh batch of magazines hit the stands, including *Radio-Craft*, *Science Wonder Stories* and *Air Wonder Stories*.

The new publications provided an even broader forum for Gernsback's inventions and forecasts. In 1934, a *Radio-Craft* cover displayed a brainchild of his

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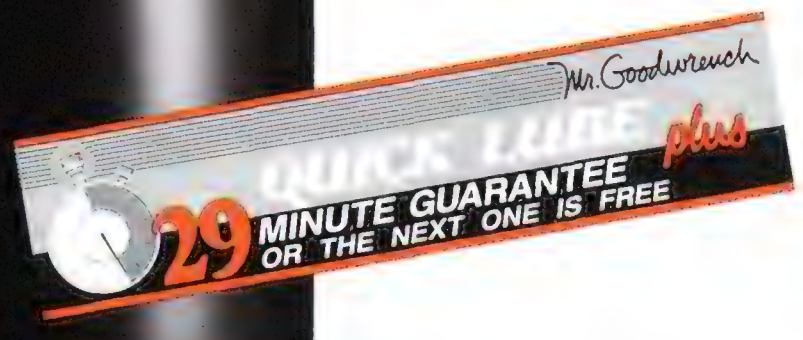

*29-Minute Guarantee applies to GM cars and light trucks.

As early as the 1920s, Hugo grasped the potential of TV; sports, he predicted, would glue viewers to sets.

Early issues of *Amazing Stories*, from the late 1920s, still relied on reprints of writers like H. G. Wells.

called the "Phonosone," a crude bone-conduction hearing aid. Other ideas included the "Hypnobioscope," a device to educate people in their sleep, and the "Isolator," a helmet-and-airhose arrangement similar to a diving bell, intended to filter out distractions and promote pure thought. Gernsback actually built himself an Isolator helmet, and he delighted in modeling the clunky device at his desk.

Perhaps it was the Isolator helmet that enabled Gernsback to predict, in 1930, that Man would shortly stand on the moon. He speculated that the first moon shot would be unmanned and outlined plans for lunar colonization. Naturally, he provided nuts-and-bolts detail: multistage boosters and tethered space walks.

At Westinghouse, a WestingMouse?

Curiously enough, one of Gernsback's best ideas began as a prank. As an April Fool's gag in 1933, he unveiled an astonishing device called the "WestingMouse Vest Pocket Radio Receiver," a fully operating miniature radio. At that time, the device was patently impossible, but Gernsback even cobbled together a dummy model of the WestingMouse and photographed it next to a pocketwatch to show off its delicate scale. He finished his description with the words "April First," but few readers got that far. Orders and telegrams poured in to Westinghouse, whose executives were not amused. Gernsback narrowly avoided a lawsuit.

It was a typical Gernsback stunt, though he generally covered his tracks by adopting joke pen names. Years earlier, Mohammed Ulysses Socrates Fips, "our Martian correspondent," had introduced the readers of *Modern Electrics* to the wonders of matter transmission, a process now familiar to viewers transfixed by the command "Beam me up, Scotty." (Fips used the impressive technology to procure ham sandwiches.)

Gernsback's inventive energies—and sense of humor—never failed. In 1955, he proposed a "Nightmare Stopper," designed to activate when the sleeper's pulse quickened. Two years later, he envisioned the arrival of "Celestial Television," a video image 60 miles wide, projected onto the night skies over major cities. By this time, many of his seemingly outlandish early predictions were coming true.

In 1946 American military communications experts bounced a radio signal off the moon. Gernsback had anticipated the operation 19 years earlier, theorizing that the procedure would take 2.5 seconds. He was off by only 0.1 second. When Sputnik was launched in 1957, few recalled that Gernsback had described and illustrated a satellite in 1929. (Scientists at MIT, when reflecting radio waves from Venus in 1958, acknowledged that the idea had been "first proposed by Gernsback in 1927.")

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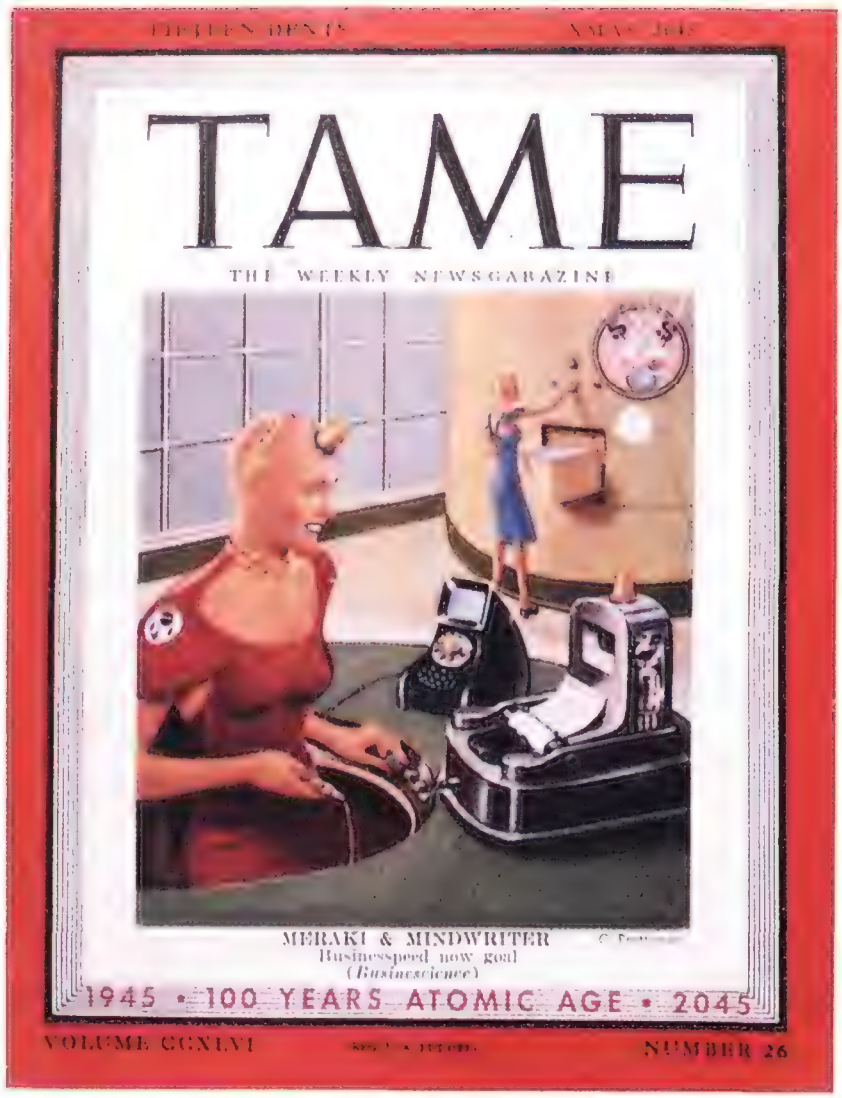

Prankster Gernsback couldn't resist parody of *Time* in 2045 and was promptly threatened with lawsuit.

With the recognition came accolades. In 1952 Gernsback attended the World Science Fiction Convention in Chicago as guest of honor, and saw the organization's achievement awards dubbed "Hugos" the following year. He became an occasional lecturer and talk show guest, even appearing on the *Tonight Show*, where he gamely attempted to explain matter transmission to Skitch Henderson and Fernando Lamas.

All the while, Gernsback continued to report to work each day. Every morning he bounced up the three flights of stairs at his headquarters at 25 West Broadway. There in his office one item stood out. On a corner of his desk sat the death mask of famed physicist Nikola Tesla, which Gernsback had personally commissioned. In Tesla's declining years, Gernsback claims to have persuaded Westinghouse (now recovered from the WestingMouse incident) to provide the inventor with a badly needed "consulting retainer."

Sam Moskowitz, who served as managing editor of *Science-Fiction Plus*, Gernsback's last science fiction magazine, recalls that the boss carried a few odd habits into his old age. Everyone had a desk phone, but Gernsback preferred to ring a bell when he desired a conference. "The bell was quite loud," Moskowitz remembers. "You'd really jump when he rang for you. For all I know he installed the system himself."

In the era of tie-dye and sandals, Gernsback continued to dress like a visiting dignitary. For evenings on the town, he favored formal wear, including spats, an opera cape and an expensive silk homburg. He even affected a monocle, though he didn't really need it. When dining out, he would refuse to eat unless his plates were warmed to the proper temperature. He considered himself a wine connoisseur and once sent back three bottles in a single sitting.

Again and again in his later years, Gernsback returned to the subject that had so forcibly impressed him as a child—outer space. He lived to see the dawn of the space age but felt that merely orbiting Earth was pointless. Earthlings, he believed, should get down to exploring other planets with all due haste.

He added, a bit wistfully, that he himself would not live to see the lunar landing he had predicted would take place by 1970. Gernsback died, in fact, on April 19, 1967, two years before the famed Apollo mission. A scientist to the last, he donated his body to a medical school, although he would have preferred to have it frozen and shot into space.

I was 7 years old when Gernsback died. I would very much like to report that he shared a final prediction with me, or handed down his Isolator helmet, but I never actually met him. I am often told that I take after him in many ways, but my grandmother insists, with evident relief, that this is not true.

Eighty years after his visits to the house on Central Avenue, however, Hugo still has a knack for shaking up the younger members of the family, as I discovered while pumping my grandmother for recollections of her famous cousin. We had been on the phone for some time, and it was clear that she had grown weary of the subject when a final thought struck her.

"There were a number of testimonials when he died," she told me. "Plaques and things."

"Where?" I asked.

"Oh, museums. Universities. And there was a thing—a place—named for him. Let me see if I can remember this correctly . . ."

"Where?" I asked again.

I could not see her face over the telephone wires, but I did not need Hugo's seeing telephone to know that she had her eyes closed and her hand pressed to her forehead. "You'd have to go a long way, dear," she said after a moment. "'Gernsback,' I'm told, is the name of a crater on the moon."

A 1929 illustration offers one typically clairvoyant Gernsbackian fantasy: the solar-powered space station.

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By Michael Parfit

Letting us down gently: the art of the parachute

After centuries of trial and sometimes-fatal error, we have learned to step out into the sky with only thin nylon and string to save us

I fell, and tumbled through death. On the other side it was a sunny afternoon, bright and breezy, and shortly I tried out my wings and fell in love.

Others had been there before. I had read the reports of combat-hardened pilots and gunners, who had written about "the peace and the comfort of the safety of my chute" or simply "If I had that chute back I would enshrine it" or "I have a baby dress made of my old chute." But until you have used one it is hard to fully understand how a parachute—a piece of nylon flimsy as lingerie, apparently held together by thread and kite string—can become the focus of intense gratitude and undying love.

My own experience began with a backhand promise. "You are not going to crater in my drop zone," said Don Balch. He is a cheerful and optimistic man, the proprietor of Skydiving Adventures Parachute School in Hemet, California. I had gone to see him because parachutes have played important, unusual and often critical roles in the history of aviation, warfare and sport, and I wanted to see them in action. Now I was going to have the chance.

The ride up to 10,500 feet was a somber experience: the roar of the engine, the wild yells of everybody else who was about to fall, the steady diminishing of famil-

At the Seoul Olympics, skydivers prepare to form five interlocked rings as they fall from a helicopter.

Inventor Robert Cocking plunges to his death under his collapsed "inverted cone" parachute in 1837.

iar things on the earth below. Goodbye, cars; farewell, houses; *adiós, mi amor.*

Modern parachutes, I kept telling myself, are extremely safe—out of more than two million jumps a year there are only about 30 fatalities. And parachutes have been keeping people alive in the air longer than airplanes. A Chinese history completed around 90 B.C. recorded that the legendary Chinese emperor Shun escaped from a burning granary tower by tying straw hats together to form a chute, which saved him when he jumped out. In 17th-century Siam a French envoy reported seeing one of the king's tumblers using two large umbrellas to float down from a high point.

Many early inventions were better left untried. One of these was a sketch drawn in 1495 by Leonardo da Vinci, who had the right idea about design—a container to catch air—but the wrong idea about size. His little pyramid chute looks about 6 feet in diameter (modern chutes designed to lower a single person average about 28 feet across). It would have been a quick and deadly ride.

Intriguing designs, but no testing

Around the end of the 16th century a man named Fausto Veranzio apparently jumped from a tower in Venice wearing a parachute made of a square wooden frame covered with canvas; from the size and structure of that one, too, an actual jump seems unlikely, and a second one impossible—at least by the same person. Actual experimentation was apparently not a prerequisite of parachute design for many years: in 1879, Benjamin B. Oppenheimer patented a system to save people from high-rise-hotel fires—padded shoes and a 5-foot parachute attached to the escapee's head.

The Montgolfier brothers, the famous early balloonists, developed several parachute designs but let an animal take the first plunge. Using a canopy 7 feet in diameter, they dropped a sheep from a tower. The sheep survived, as have most of the hundreds of cats since flung by children from hayloft windows on experimental parachutes made of sheets; as well as several dogs, at least one fox and various kinds of livestock that lived through wartime drops only to be eaten upon arrival at the ground; and an assortment of monkeys and bears used after World War II to test military ejection seats.

The modern chute was born in 1785 when J. P. Blanchard invented a collapsible silk parachute. "There is some evidence that he jumped from a balloon in 1793," writes Dan Poynter, the author of several books on parachuting, "and he did break a leg about this time." There is no evidence, but a strong likelihood, that Blanchard also invented the bit of repartee common today to all injured skydivers:

A French lampoon pokes fun at the first successful parachutists, the Garnerin family. Here niece Elisa, shown with her skirt as the parachute, completes one of 40 successful jumps from a balloon. Uncle André-Jacques designed the 23-foot silk chutes actually used.

"Did you break your leg jumping?"

"No. Landing."

As the plane I was in droned mercilessly higher through the turbulence, and Don Balch grinned beside me, I remembered that the first parachutist to jump regularly, André-Jacques Garnerin, discovered a hazard of another kind. Garnerin used a 23-foot silk canopy and jumped from balloons in the early 19th century. But the canopy swung him so wildly from side to side that by the time he reached the ground he must have wished he were dead. Historian Charles J. Cleary wrote that Garnerin became "violently ill in the presence of a large number of people, including some members of Royalty."

"Parachuting is not magic," Don Balch likes to say; "algebra is magic." Garnerin's problem was simple. A chute works primarily by catching air under it as it falls. The amount of air it traps, and the rate at which it lets air out, either through the cloth itself or else around its edges, determines how fast it falls with a given weight. If the parachute is a solid sheet of relatively-low-porosity cloth, air spills out first one side, then the other, swinging the load, and before you know it Garnerin turns green and royalty is offended. This has been partly solved by cutting a small hole in the top of the canopy—a vent.

In 1837 a man named Robert Cocking threw umbrellas out of windows and, noticing that they floated down with the handle up, thought he could achieve stability with a rigid chute in the shape of an inverted cone. On July 24, 1837, Cocking rode with two balloonists into the evening sky over London, his new chute hanging beneath. At about 5,000 feet he made his preparations, polite to the end. "Goodnight, Mr. Spencer," he said. "Goodnight, Mr. Green." He climbed down into a basket under the cone and cut away from the balloon.

The cone didn't oscillate until after it collapsed, a few seconds into the flight. "Needless to say," writes the circumspect Cleary, "the result of a fall from that

Writing this story was a leap of faith for Michael Parfit, who had piloted his own plane as far as Brazil on assignment but never before jumped out of one.

height was the same then as it is today." Cocking, in Don Balch's expressive term, "cratered."

At about 10,000 feet above Hemet, the airplane leveled off. Balch grinned at me. "All set?" he shouted. "All set!" I lied. He opened the door. Wind and empty space roared hungrily at us. Don Balch whooped with joy. I felt like giving him a little push: "Goodbye, Mr. Balch." We got on our knees, which seemed appropriate, and turned to face the front. As instructed, I covered the two rip cords strapped to the front of my harness with my arm, to prevent these most critical handles from being accidentally pulled while I was still in the plane.

Rip cord allows the jumper to say when

The rip cord is a cable that fits like a padlock through one or more loops on the pack's opening flaps, holding them closed until the cord is jerked out. It was invented in 1908, but it wasn't until 1919 that it took on its present role (which would now give me the delightful option of falling through space for 30 seconds or more) of letting the jumper himself choose when to open the chute.

In World War I, that kind of manual parachute could have saved a lot of lives. But the idea of abandoning a disabled aircraft in flight didn't catch on until later. Before the war, people like Georgia Thompson, who was known as Tiny Broadwick (right), made a good living cheating death in front of crowds, using chutes that were initially attached to aircraft and were broken free by the jumper's fall. Between 1908 and 1916 Broadwick jumped more than 600 times and didn't even die once, but the Armed Forces were not convinced. So during the war Allied pilots, who were not issued chutes until late in the conflict, kept having to choose between being burned to death in falling planes or jumping out and cratering.

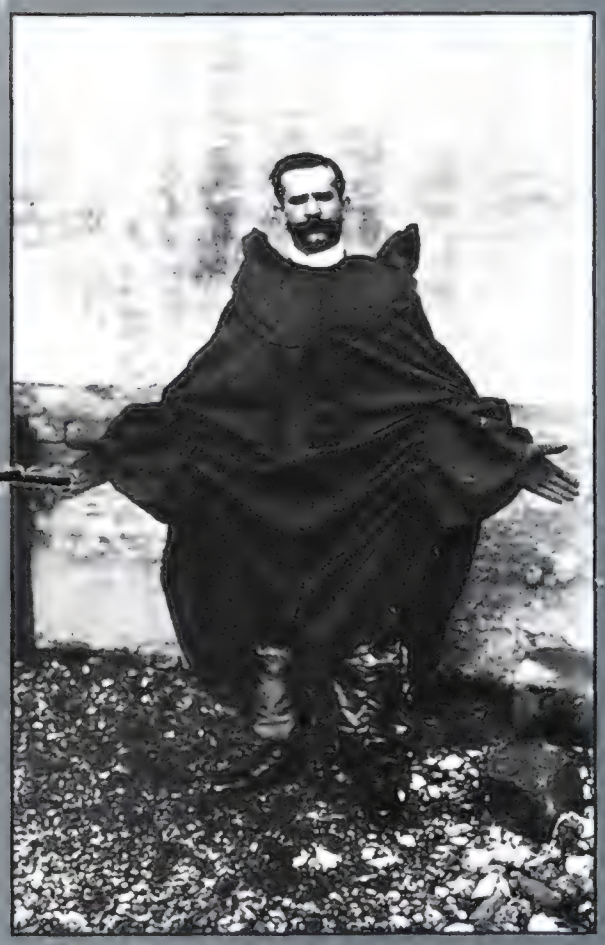
In 1918, when this gruesome evidence could no longer be ignored, Floyd Smith and several others were hired to develop emergency chutes for the Army Air Service. Smith was a tall, lanky adventurer, a former cowboy and trapeze artist who started jumping and designing parachutes before the war. In 1919 Smith designed a chute-and-pack combination in which a rip cord, pulled by the jumper, opened flaps that released a small, spring-loaded pilot chute. The pilot chute leapt out into the rush of air, popped open and yanked the main chute free. The system worked so well it still forms the basis for almost all parachute and pack designs.

One of the manufacturers that capitalized on Smith's idea was Switlik Parachute Company of Trenton, New Jersey. During World War II it made thousands of chutes for both emergency jumps and troop deployment. The latter culminated in the dropping of battalions of men during the Normandy Invasion, but Dick Switlik, son of the founder, is most proud of designing a system for parachuting hordes of inflated dummy soldiers to mislead the enemy. German radio broadcasts, he loves to point out, called the dummies "the product of a fiendish Anglo-Saxon mind."

Tiny Broadwick makes one of 600 jumps from seaplane piloted by aviation pioneer Glenn Martin.

Switlik's factory contains a museum of parachutes, a tall room festooned with silk and nylon. There hangs a selection of old and older parachutes, representatives of most of the many kinds that evolved over the years. Besides those designed to carry people gently to earth out of disabled aircraft, or to fight wars or put out forest fires, were chutes for slowing down jets, for catching falling spacecraft, for slowing and stabilizing falling bombs, and for jerking cargo out of the backs of aircraft in flight. Many of these latter were "ribbon" chutes or "ring slot" chutes, in which the canopies were made not of a single piece of fabric, but of strips sewn longitudinally or in concentric rings, with gaps between them.

Ring slot and ribbon chutes are necessary because chutes open with a bang. Because their opening is controlled by the volume of air that it takes to fill



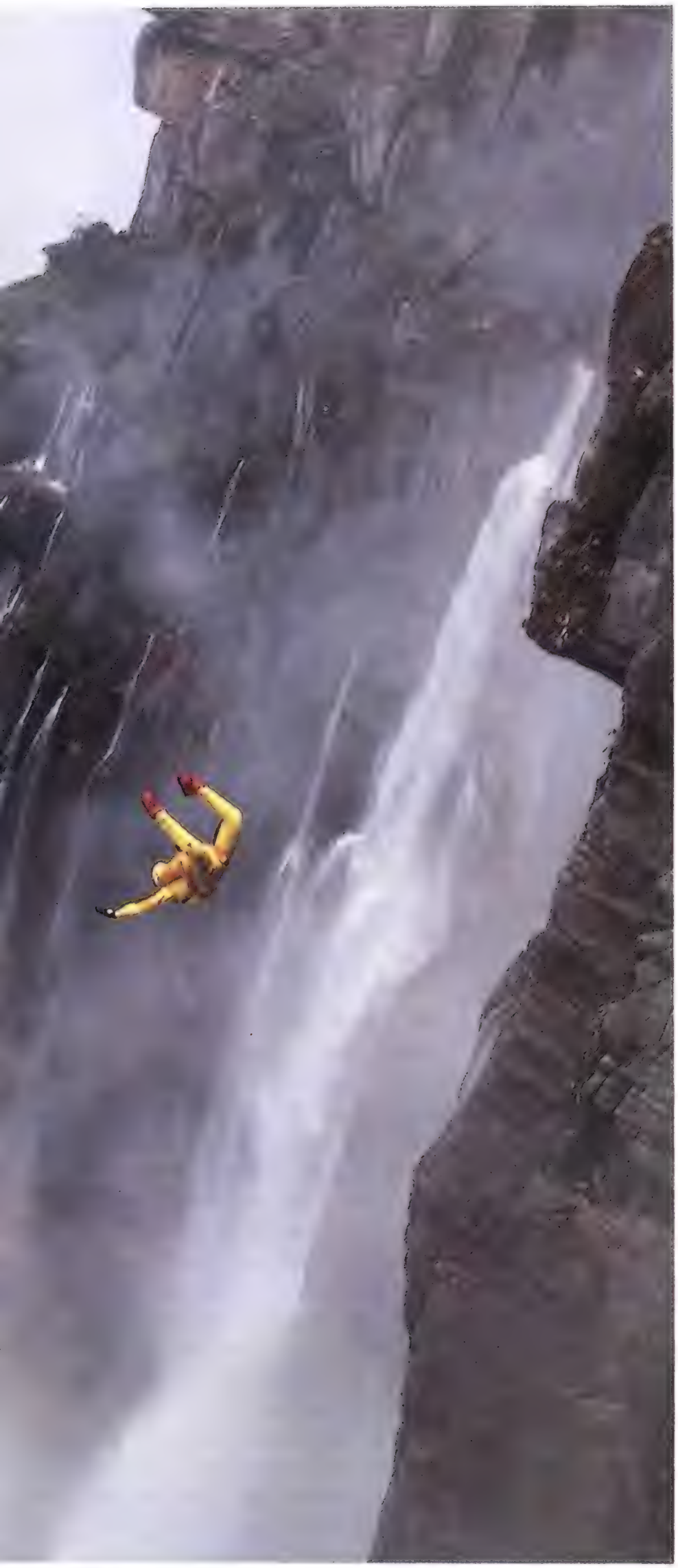
This tailor's "batsuit" failed him on a leap from the Eiffel Tower, but Käthe Paulus survived 65 jumps with the rig at right. Parachute worn as a hat, center, was too small to have saved the wearer.

them, the faster the cargo is going, the quicker the necessary amount of air gets into the canopy and inflates it. It's like the difference between loading a water balloon with a faucet or a fire hose: same amount of water, but a different time scale. With a parachute, if the falling object is moving too fast, a solid chute will open with such a bang it will explode into shreds, becoming about as useful as a handkerchief. But a ring slot or ribbon chute lets enough air escape to prevent self-destruction.

One of the greatest dangers to a jumper (other than dying if the main chute and the obligatory reserve don't work) is in that bang when the chute opens. If the bang is big enough it can wrench the life right out of you. So various devices have been invented to temporarily reef parachutes so they open in more deliberate stages. Parachutes that slow the hurtling fall of space capsules and those attached to ejection seats designed to free pilots from fast aircraft are reefed in several places and released by timed charges; sporting chutes are reefed by an ingenious device called a slider. A slider consists of a small, flat piece of cloth with big grommets in the corners, through which the chute's lines pass. The slider is shoved up high on the risers when the chute is packed, and takes a second or so to slide down as the chute opens, making the big pop much less severe.

Some early chutes were actually made of cotton, but most were silk; when Japan's attack on Pearl Harbor cut off the silk supply, the Allies turned to a brand-new invention: nylon. Today "hitting the silk" really means "hitting the 1.1-ounce-per-yard ripstop nylon." This nylon is as light as lingerie—a man's shirt is typically made of cloth about three times as heavy—but an inch-wide piece requires 42 pounds of pulling strength to break, compared with 2 to 10 pounds for lingerie. The suspension lines that go from the canopy to the jumper are also nylon, except for the most modern, now used in sport jumping to cut down on drag. These "microlines" look like kite string and are made of high-density polyethylene.

One of the Switlik Company's great hopes before the war was that parachutes could be used to save the lives of airline passengers. The idea was introduced in the late 1920s, with the help of Floyd Smith, who Dan Poynter says "contributed more to parachutes in this century than anyone else." In 1929 Smith flew a small plane over a crowd of 2,000 hopeful spectators. In it sat



Jan Davis, on skydiving Venezuela's 3,212-foot-high Angel Falls: "No more frightening than anything else."

a passenger, Marie Smullin of Philadelphia, who, a newspaper later reported, was "clad in the usual street garb," not too worried about fashion, either. She had other concerns.

In Smullin's seat cushion, to which she was strapped, was hidden a Switlik parachute. As the plane flew over the airport Smith reached down and, no doubt with the same kind of maniacal grin Don Balch had years later when he invited me to step out into the wind, yanked the lever. A trapdoor opened beneath her. Goodbye, Miss Smullin.

The trapdoor worked perfectly. The parachute worked perfectly. Marie Smullin worked perfectly, floating down to safety in her street garb. But somehow the idea of dropping passengers over the countryside never quite caught on.

An old idea is tried on the shuttle

Curious ideas never die, however; they just wait for stranger times. A similar system has been installed on the space shuttle to get the crew out of the orbiter if something goes wrong early in the flight. Like the Switlik airline chute system, the shuttle parachutes, along with life rafts and emergency radios, are built into the orbiter's seat cushions. In an emergency, if the shuttle could not make it to one of several landing sites scattered around the world, the crew would buckle on these elaborate cushions, open the operations hatch, extend a curved, telescoping fireman's pole and, one at a time, slide down it into the void.

The system has been tested. The lot of sliding down the fireman's pole fell to Bob Hudson and a colleague, who were then test jumpers at the Naval Weapons Center at China Lake, California.

Hudson is a slender, wiry man with no machismo in his manner. He doesn't need it; he's already proved everything. He's jumped at 1,000 feet; he's jumped at 35,000 ("Colder than hell"); he's jumped at night, in wind, in rain, in cloud and in snowfall. He slid down the space shuttle fireman's pole in 1988. "You were on that pole," he said, "and once you made that move to go, you were gone. It was a real wild and unusual experience."

It occurred to me in Don Balch's airplane that this phrase applies to most experiences in parachuting. Special Forces troops, such as the Navy Seals, practice an operation called offset jumping, in which they leave planes at as high as 35,000 feet, at night, when the earth is only a black hole in the starry sky, and fly by chute as far as 30 miles. Parachutes allow sport jumpers to pile out of large aircraft, fall together in conventions, and perform marriages and all manner of other celebrations far above the ground.

People who obviously don't have enough on their

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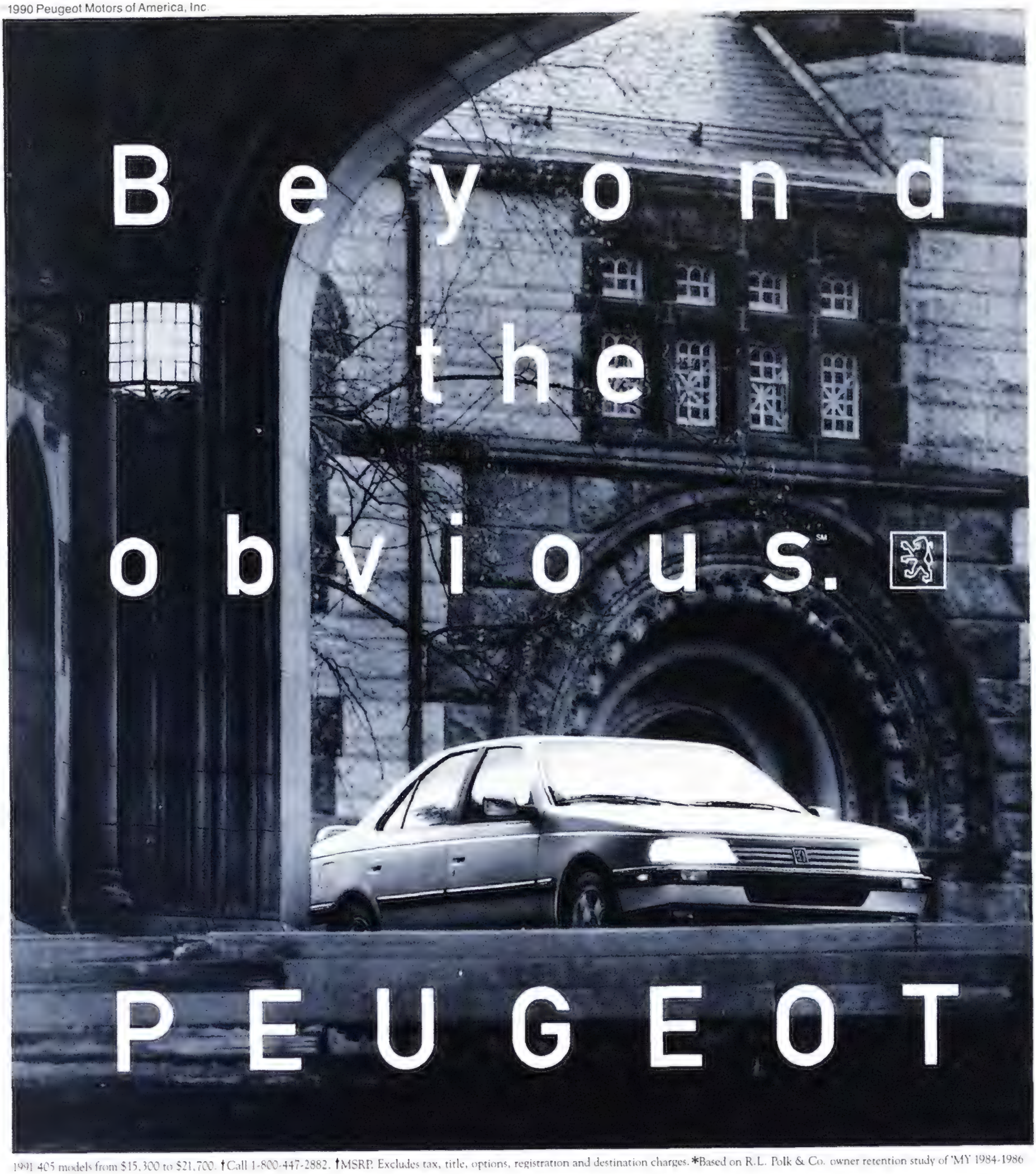

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Evidently, once you've looked beyond the obvious, it is difficult to see anything less.

Skydiver Ted Dougherty demonstrates how pilot chute pops open, pulling the main chute out of its pack.

Al King adjusts the slider, a device that slows the parachute's opening and minimizes shock to jumper.

minds already have recently taken to jumping off cliffs and other high places. It's called BASE jumping, an acronym for the things the people jump off of: Buildings, Antennas, Spans [meaning bridges] and Earth. In Santa Barbara, California, I met Jan Davis, the first woman to jump off Angel Falls, in Venezuela, which drops 3,212 feet. Davis was quietly cheerful about it.

"You come up and you just kind of throw your body off into midair," she said. "It's no more frightening than anything else. It's just a different experience." She fell for about 12 seconds, while rock and water flew past and she gazed across a valley at another waterfall on the other side. When she pulled the rip cord the parachute quickly popped open and suspended her in a sudden misty peace inside three walls of rock called the Cathedral. With the roar of the falls in her ears and the mist wet on her face, she flew the chute out of the Cathedral and landed in the jungle.

That had happened a year ago; now she was hobbling around her house, one leg in a cast.

"Did you do that jumping?" I asked.

"No," she said. "Landing."

Many of the daring feats of sport and military jumping have been made possible by a breakthrough in parachute design invented in 1964 by Domina Jalbert of Boca Raton, Florida, a man revered by both kite fliers and skydivers. Jalbert is 85 years old and, he likes to say, has been designing kites, balloons and parachutes for 80 years.

"I was flying my Bonanza back from Patrick Air Force Base," Jalbert said when I pressed him to describe his moment of revelation. "I looked down at the wing and said 'Hey, I'm flying!' " That's all it took.

He should, he thought, be able to make a kite and a parachute that worked the same way as a wing, with a flat bottom and a curved top. He had seen that the nose of a balloon tethered in wind will cup inward, and thus figured out how to inflate his idea by the force of its own movement.

By the following afternoon he had sewn together the first Jalbert parafoil (SMITHSONIAN, June 1982). At 4:30 that afternoon he took this wholly new idea outside; the fat kite soared into the sky.

The magic of the "ram air" chute is that the piece of cloth works, as Jalbert had hoped, like a solid aircraft wing. The chute is made of two layers of very-low-porosity nylon, open at the front and closed at the back, cross-sewn with shaped fabric ribs. The wind blows into the open leading edge and pumps the chute up like a balloon, but the internal fabric ribs give it the classic airfoil shape, which means the chute is actively lifting itself as well as blocking air.

It was amazing. Jalbert had created a parachute that you could fly in whatever direction you chose just by pulling on suspension-line handles that worked the back of the chute like ailerons; it would cover ground at about 20 miles an hour and would land gently. "You pull down on both handles," Jalbert said, "and you come to earth like a pigeon."

To Jalbert, parachute design is an art. "The long-haired professors at MIT say you can't do it," he said. "I don't know better. But I work, and without fail I pick up the marbles. Theory is debatable; performance is what you see with your eyes."

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Returning from Panama, paratroopers of the 82d Airborne hit the silk over Fort Bragg, North Carolina. Chutes are also used to land equipment, some of it yanked out of open rear hatches on speeding planes.

One of the world's premier parachute aerodynamicists came close to agreeing with him. "Designing a parachute," said Theodore Knacke, "is not like designing an aircraft wing; you cannot have any true dimensions." Knacke was senior engineer for the Gemini and Apollo programs. He was also a top consultant for the Mercury program, and the space shuttle booster recovery program, in which chutes lower 180,000-pound rockets safely into the ocean to be used again. "Everything breathes and gives," Knacke continued. "The aerodynamics of aircraft are a steady state, but you will not find a close mathematical solution to the opening of a parachute. The airflow changes all the time."

So you can't just draw a chute on a computer and know how it's going to work; you have to experiment. "It was always just 'Let's make it up and try it,' " Dick Switlik remembered, and I heard something similar on a grassy field near Philadelphia from a man who had just floated down out of the sky.

The field was a small airport used for testing by the Para-Flite parachute company, which during the '70s and '80s had taken Domina Jalbert's dazzling idea and refined it into the highly maneuverable, yet relatively docile, rectangular wing-type chutes used in sport jumping and some military operations today. Three men had just jumped: Jimmy Mack, Troy Loney and Elek Puskas, the company president. The blue test parachute that Mack was wearing was covered with short white tufts of yarn, which reveal the patterns of airflow around the chute. As soon as the three men were on the ground they gathered in intent conversation, while a gray cat wandered among their legs.

"Well, that's much better."

"Tufts looked good."

"We may want to pull the tips down; the brakes are too deep."

Puskas had worn a new reserve parachute, which is designed to open quickly. It, too, had worked. "Well," he said approvingly, "that rolled my socks down."

Puskas wandered off, followed by the cat, to debrief himself into a tape recorder, and Loney talked to me about why he liked this business. "There aren't many textbook solutions," he explained. "There's an opportunity for more creativity. You have to think more and work harder, instead of looking up what someone else did 25 years ago."

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A slightly overbooked plane carries skydivers to the place where they will step into the air. Those in the front have to hang on the tightest.

Steering by pulling down with his right hand, Ty Kelly flares his airfoil chute and effortlessly drops to the ground in Snohomish, Washington.

Up in Don Balch's airplane, I didn't want to think any more at all. It was time for me to get out and do my own testing.

Getting out of an airplane is simple: it's like stepping onto the trapdoor at your own hanging. Not much to it. A quick shuffle sideways out of the door and onto a small step. Outside, I gripped the plane's strut. Balch was hanging on to the strut at my right, his grin widened into a grimace by the wind, and another instructor was to my left. Nods from each. Wind. Noise. Ten thousand feet of space below. I did a little ritual pushup on the strut and the three of us stepped backward. Goodbye, Mr. Parfit.

For all my dread, I was unprepared for the rush of terror. I have never been so shocked. It was a tumble straight into nothing, into infinity, into the hole in the earth; the end of the world. No words formed, no shout escaped. My whole body buzzed and dissolved. I fell, my eyes closed, and I perished.

Life was gone. But this was exactly the situation for which the parachute was made. "The parachute," Theodore Knacke said, "is the pilot's last contact with Mother Earth." Thousands of times, parachutes have intervened between human beings and death. Saving lives is the parachute designer's greatest reward. "The thing you want to do," Knacke said, "is to have the pilot eject from the SR-71 at Mach 3 [three times the speed of sound] and live, and stand in front of the TV camera and say 'Piece of cake.' "

The next thing I remember after jumping was falling. After what seemed to be a long time I opened my eyes. Was I alive? As I fell the nothingness slowly became firm, a living pillow. The sensation of falling disappeared as my body stopped accelerating. The air was so substantial that in my recollection of it later, it seemed to be spectacularly, unnaturally clear, too clear to be so solid; a huge cube of crystal on which I lay.

Death was past, but the dream on the other side of it was restless. The crystal sky roared. Mother Earth moved, drawing me into a crushing embrace. I was strangely awake but distant, falling beyond myself like a jet outrunning its sound. At 5,000 feet I reached for the rip cord, to at last produce the thing in which I had placed such ultimate trust.

The rip cord pulled smoothly. There was a rattle of fabric behind me. Then the chute grabbed me off the glass pillow like a hawk. I looked up. I had to crane my neck. Above me was a blue-and-yellow lumpy canopy, a translucent corrugated roof. The parachute looked neat and small, a personal wing, with light shining through it—blue and yellow and calm.

Early mass-produced parachutes made by the British in 1919 were called Guardian Angels. Now I knew why. The chute was hard to see up there above me, like a protective parent trying to stay out of view of the walking 2-year-old; yet it was broad, strong, luminous and intimately solicitous. It rippled gently in the breeze, like a small flag.

The peace, the comfort, the safety! Because of it, life had caught up with me again. Life was beautiful. Thank you, Mr. Garnerin. Thank you, Mr. Cocking. Thank you, Mr. Smith. Thank you, Mr. Jalbert. See you later, Mr. Balch. I flexed my nylon wings and came back to earth like a pigeon.

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A pioneer in statistical analysis, Deming makes a point with pen while teaching class at New York University.

By Lloyd Dobyns

Ed Deming wants big changes, and he wants them fast

He is the capitalist revolutionary who sold Japan on the notion that quality drives profits up—and now he's trying to sell us

He listens intently to one of Ford's quality-assurance managers (left) after body-assembly-division meeting. Then he jots notes during session with Ford executives at the corporate headquarters in Dearborn, Michigan.

He has always looked younger than he is, but even with that he is clearly old. He moves slowly through the hotel lobby, preceded by his ample stomach, leaning forward slightly and looking straight ahead through his glasses. From a distance, he appears to be completely bald, but as he gets closer, you see that his hair is white and cropped close to his skull. There are hearing aids in both ears. He is, as always, dressed in a custom-made suit. All of his jacket pockets are stuffed—clippings, a calculator, scraps of paper, a little magnifier, file cards, a small notebook, a pocket diary and whatever else he's picked up—and the pocket of his white shirt holds no fewer than a half-dozen pens and markers. On the lapel of his jacket there is a round, thick, gray pin about the size of a dime. The only thing about him other than his age that attracts anyone's attention this morning is that his assistant, an intern and doctoral candidate in business management, is an attractive, well-dressed woman young enough to be his daughter's daughter, and they are walking through the lobby holding hands. You get a sense that for him, it's partly for support and partly for the hell of it.

His business card reads "W. Edwards Deming, Ph.D., Consultant in Statistical Studies." It would be more accurate if it added, "and Capitalist Revolutionary." He wants changes, and not little ones, in everything—business, industry, education, how we live, how we teach our children and how we deal with one another. Deming wants something better for us all, and for most of his 89 years he's been fighting to get it. He knows from experience that what Machiavelli wrote is true: "There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success than to take the lead in the introduction of a new order of things."

He initiated a new order of things in Japan. It was a 49-year-old Ed Deming, tall and crew-cut, who in 1950 started teaching Japanese managers, engineers and scientists how to manufacture quality. An important step was to teach them to use statistics to find out what any system would do, then design improvements to make that system yield the best results. That idea sounds so logically simple that the tendency is to say, "Everyone knows that." No, everyone doesn't.

Photographs by Cameron Davidson

En route from La Guardia airport in a limo, Deming and an intern go over his appointments book. At 89, he keeps a hectic schedule, consulting and teaching at seminars here and abroad, practicing what he preaches: "Improve constantly." His enemy is the status quo.

Americans have a penchant for solutions that are easy to understand, easy to do, aimed at a specific goal and fast—ten nonthreatening steps to nirvana in 30 days. When it comes to improving what we do, there seems almost to be a flavor-of-the-month approach with each new, highly touted technique stepping on the heels of the one that went before—management by objective, management by results, management by problem report and resolution. Those are the cookbook methods, where you blend the worker and the machine, stir in a pinch of raw material, add a promise of a bonus (or a threat of dismissal), half-bake for 30 minutes and declare a dividend. It's easy to explain, easy to understand, and it doesn't work.

Deming teaches that the more quality you build into anything, the less it costs. That, too, sounds self-evident, but it's not. Maryann N. Keller, an automotive industry analyst and managing director of a brokerage firm, believes that the most profound change in the American auto industry in the past ten years was the realization that "quality can cost less because you design it in rather than inspect it in." The traditional American idea of quality is, as Keller says, to inspect it in; that is, you build a whole lot of widgets, inspect them and separate the good from the bad. The bad can't be sold, but they cost a lot. Not only must all those inspectors be paid, but a bad widget takes the same amount of raw material, machinery, work time and attention as does a good widget. That explains why, typically, about 25 percent of any manufacturing plant's budget goes for repair and rework. That's why so many manufacturers think quality costs more, but what actually costs is a lack of quality.

Vernay Laboratories in Yellow Springs, Ohio, makes small, precision-molded rubber parts for the automotive, home appliance, pharmaceutical and medical industries. Before the company heard of Deming in 1983, there was one inspector for each employee molding parts, and to insure quality, those inspectors checked everything that was produced. Think of that: nearly half of the production workers were paid to check what the other half did. In five years, doing what Deming taught it, Vernay cut its ratio of inspectors to molders by 75 percent. In the same five years, the plant's scrap and returned-product rates were cut by three-quarters, and productivity in the plant was up 30 percent. Quality was up, costs were down and the savings could be given to the customers. "One of the great pleasures I've had over the last five years," says Dale Piper, national sales manager, "was walking into the purchasing office of one of our larger customers and telling them that we were going to be giving them a price reduction, a completely unsolicited price reduction."

The basics of Deming's method are contained in a list of objectives he calls "the 14 points." These managerial imperatives are more philosophical than mechanical. The first of them is to "create constancy of purpose." You have to decide what business you're in

Lloyd Dobyns is currently working on a television documentary and book about quality control. The book will be published by Houghton Mifflin.

and how you can stay in that business. It sounds deceptively simple, until you try it. Buggy whip makers undoubtedly believed they were in the business of making buggy whips, which explains why they are no longer in business at all. They were actually in the business of vehicle acceleration; just making buggy whips, even the world's finest-quality buggy whips, wasn't enough. Part of constancy of purpose is staying ahead of the customer, not only meeting present needs, but planning for future needs, as well.

The Ford Motor Company began consulting with Deming in 1981, and one of the first questions he asked was about constancy of purpose. Top management began to think about it. *Eighteen months later* Ford had a 350-word statement of its missions, values and guiding principles. By now, there can't be a Ford employee, supplier or dealer anywhere in the world who does not know that "Quality is Job 1." Donald Petersen, Ford's recently retired chairman and chief executive officer, says, "I am a Deming disciple." And he adds, "Those enterprises that don't adopt a quality culture simply are not going to succeed."

The issue is even broader than that. Improving quality, Deming says, automatically increases productivity, one of the measures economists use to judge how the economy is doing. Ours is improving, but not at a pace with Japan's. At current rates, the United States' productivity will double in 120 years, Japan's in a generation, meaning its children's standard of living will double while our children's will stay about the same.

When he first went to Japan, Deming was certain he could teach the Japanese how to join the leading industrial nations by improving quality. "I think that I was the only man in 1950," he says, "who believed that the Japanese could invade the markets of the world and would within five years." The lapel pin that few in this country could recognize represents Japan's Second Order Medal of the Sacred Treasure, awarded to him by the late Emperor Hirohito. The citation says the Japanese people attribute the rebirth of Japanese industry and its worldwide success to Ed Deming.

As famous as Deming is in Japan, he was comparatively unknown in the United States until June 1980, when he appeared in a network television documentary titled, *If Japan Can, Why Can't We?* It compared industrial productivity in Japan and the United States. I was the writer and narrator. Cecelia S. Kilian, Deming's secretary since 1954, and known almost universally as Ceil, said that starting the next morning, "Our phones rang off the hook. . . . Dr. Deming's mail

On his way to catch a plane, Deming pauses to confer on an escalator with an associate. He tells clients that increasing quality doesn't just lower costs; it also increases productivity, one of the measures that tell how well the economy is doing.

quadrupled, and beyond." Petersen at Ford was one of the eventual callers. By late 1987 he told an interviewer, "We are running well over 50-percent-better levels of quality in our products today, and I dare say that I would not have predicted that much improvement in this short time." That same year, 1987, General Motors called Deming. The word was spreading in the industry: building quality drives costs down and profits up.

At an age that most American men will never reach, Deming continues trying to transform (his word) the United States, to make it possible for us to join what he calls "the new economic age." To teach corporate managers how that can be done, he works six days a week and is booked into 1991. Ceil is his whole staff.

Deming is never quite satisfied, so any attempt to chisel what he says into stone is frustrated by his insistence on constantly trying to improve or clarify his thoughts. But that continual improvement is at the heart of his teaching. It is one of his 14 points: "Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs." To get to that point, Deming says, you not only need constancy of purpose, you also have to recognize that we're in a new economic age with a single global market, that mass inspection does not produce quality, and that buying from the lowest bidder is costly. To get good supplies, Deming says, you work with a single supplier to improve his quality and lower his costs, cultivating a long-term relationship in which both of you will profit.

Cheaper is not always better

That last one leaves people in purchasing departments almost in shock, since it is a basic tenet of American industry that you play one supplier against another, demanding and getting lower prices, and if one supplier won't cut his price, another one will. That's the way you cut costs and improve profits, and everyone in business knows that. And like a great many other things that everyone knows, it's wrong. Deming tells the story of a shoe manufacturing company where productivity dropped like a rock in a well, and a consultant was called in. The first thing the consultant did was what the typical American manager would rather die than do: the consultant went on the factory floor and asked the workers what went wrong. Shoes are sewn together, and it takes an enormous quantity of thread. Sewing machine operators said the thread kept breaking, so they spent half their day rethreading the machines. You know the end of this story. Some time earlier, some genius in purchasing found a company that would sell thread a penny a bobbin cheaper than their regular supplier, and to save a penny a bobbin, the company's productivity was cut in half.

Waiting for a plane in Detroit, Deming talks with a magazine editor. He was not well known in this country until he appeared in a 1980 TV documentary that compared Japanese productivity with our own.

Back in his office, which is located in the basement of his Washington, D.C. home, Deming dictates to Cecelia Kilian. She has now worked as his secretary for 36 years. Kilian is the only full-time employee on his "staff."

The rest of Deming's 14 points basically deal with management and labor and their relationship. He says quality is made in the boardroom, but everyone must have a part in changing the company. Management must learn about the responsibility for quality, must learn how to lead, instead of giving orders, and must make it possible for everyone to work together for the good of the company.

Everyone already knows that? If, in the typical American firm, everyone is working for the good of the company, then why are different divisions within that company competing? Why is it necessary to give employees annual ratings or performance appraisals? What's more important to you, getting a good rating

for yourself, or helping another person improve so that the whole company will prosper? Why are there numerical goals or work standards? Are we trying to make quality, or are we satisfied to make daily quotas?

If you want to make quality, management leads in the design of product and service, but everyone has to understand where they're going. If you tell someone to wash a table, the order doesn't mean anything unless the worker knows why. Is it being washed to serve lunch? Simple enough and quickly done. Is it being washed as an emergency operating table? Not easy, but it can be done. Is it being washed to go into a computer "clean room"? Can't be done.

Job training alone, Deming says, is not enough; the company has to help with employee education in a more general way, too. At Ford there are joint company-union education programs, everything from helping you brush up on your high school math to studying for your college degree. College courses are taught at no cost to employees in learning centers at Ford facilities or at the local union hall. The idea is this simple: the smarter everyone gets, the more everyone will be able to help the company.

W. Edwards Deming is an unlikely capitalist revolutionary. Had he become a Marxist, it would be more understandable. If he ever saw a silver spoon as a kid, it belonged to someone else. He was born in Sioux City, Iowa, on October 14, 1900. With his mother and father, he and younger brother Robert went to Wyoming seven years later. Wyoming was the frontier, and his father had staked a land claim there. Sister Elizabeth was born in a four-room tar-paper shack in Powell. In winter, snow blew through cracks in the walls and around the windows. Deming remembers kneeling in the shack with his mother and brother and praying for enough to eat. "I think I had a job when I was 8 years old or 9," Deming says. "Worked in a hotel, night and morning, before and after school, a job that wouldn't exist today." He carried in kindling and coal, emptied washbasins, tended the boiler. "A dollar and a quarter a week, but those were gold dollars."

In the fall of 1917, his saved money in his pocket, Deming took a train to the University of Wyoming at Laramie. "I studied engineering," he says, "but I really didn't know what engineers did. The course appealed to me—mathematics, thermodynamics, electrical circuits." To stay in college, he worked at anything that paid; after four years, he left Laramie with about the same amount of money he'd arrived with.

Deming taught and finished work on his PhD in

Even in a rare quiet moment at home, Deming is a study in concentration as he works at his piano. For 65 years he has composed masses and other music as an avocation. Some of his pieces have been published and performed.

On last day of classes at NYU, Deming takes time to autograph copies of his book, *Out of the Crisis.*

mathematical physics at Yale in 1927, then went to work for a research laboratory affiliated with the Department of Agriculture in Washington, D.C. He had other offers, good ones in private industry, he recalls, but he decided on this one and, he says now, "That was no mistake. . . . There were great men there." (And at least one great woman, Lola E. Shupe, his assistant and coauthor of several papers, whom he married in 1932. She died in 1986.)

Deming had learned to use statistical theory while studying physics. At the Fixed Nitrogen Lab, he devised statistical methods to replace some experiments, saving time and money. Impressed, one of his bosses introduced him to Walter Shewhart, then at the firm now known as AT&T Bell Laboratories, who was working to improve the quality of telephone equipment. Shewhart wanted the expression "as alike as two peas in a pod" to be replaced by "as alike as two telephones." He believed that could be accomplished with statistical analysis.

During World War II, it was largely through Deming's efforts that 35,000 American engineers and technicians were taught to use statistics to improve the quality of war matériel. That work brought him to the attention of the Union of Japanese Scientists and Engineers (JUSE). When the war was over, Japan was little more than a pile of rubble and its industrial capacity was severely crippled. JUSE asked Deming to help its members increase productivity. In July 1950 he met with the top management of Japan's leading companies, and he gave eight daylong lectures titled "Elementary Principles of the Statistical Control of Quality" to 230 Japanese managers. It was, essentially, the same course he had taught Americans during the war.

Why did his teachings catch on in Japan but not here? Because, Deming says, the Japanese knew they were in an economic and industrial crisis and we don't. Yet here we are in 1990, the world's most indebted nation, borrowing heavily from, of all people, the newly wealthy Japanese. Deming tells students at a four-day seminar in Texas that we can recover. Then he adds, "Nobody's sitting here *predicting* that we'll survive. We may not. There's no regulation saying we must survive. Purely voluntary." And he tells a group in Ohio, "We can rise from the ashes like a phoenix, but it will take a transformation to do it."

By transformation, he means adoption of his quality philosophy. It is not so much a recipe of dos and don'ts, although there are some, as it is a method of continual improvement that involves reducing variation. American manufacturers say that they are already doing that, that they have strict specifications for every part. A quick story. An American car company was having trouble with transmissions made at one of its plants here, and warranty costs were enormous, a drain on profits. The same transmission, built to the same specifications at a plant in Japan, was not causing problems. Engineers carefully examined 12 American transmissions; variations existed, but all were well within specifications. A quality-control inspector would have been delighted with every one. When the 12 Japanese transmissions were tested, an engineer reported that the measuring equipment had broken. It hadn't; in those transmissions, there simply was too little variation to measure. They didn't just satisfy the specs; for any practical purpose, they were identical.

Staying close to what is best

That story's true; this one's made up. Assume that we all work in a room together, and we know by statistical analysis that we produce our best work when the temperature is 68 degrees F. But if it's 67 or 69, the loss in terms of the quality of our work is so imperceptible that it simply doesn't matter. Now, should the temperature fall to 58 or rise to 78, the loss will be enormous. Take that same idea and apply it to specifications. Everything inside a given set of specifications is not the same. Some are worse than others, and the farther away you get from what is best, the worse it is and the greater the loss in quality will be.

Statistics alone cannot assure reduced variation, Deming says; it takes everyone, management and labor, working together. To get that kind of cooperation you have to throw out much of what is currently ac-

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cepted as good management practice. Not only do you have to do away with bonuses and incentive pay because they create competition; once you adopt the Deming method little else stays the same.

Ben Carlson, executive vice president at Vernay and chairman of its Deming Steering Committee, says the Deming method "changes the relationship with your customers; it changes the relationship with your suppliers; it changes the relationship you have with your employees." Customers become the most important people in your business. Unless the customer is so delighted that he's not only willing to come back but eager to bring his friends, you can close the door now and save time. Suppliers can no longer be played off one another for lower prices. They become your partners, and you have to help them improve so they can give you continually improving supplies for lower prices. And if you and your employees don't work together in mutual respect toward the same goal, how good the supplies are won't matter. Corny as it sounds, Deming wishes work could be nicer, more satisfying.

In teaching people to be nicer, he himself can be abrasive. Polite to the point of courtliness in social situations, he can be short-tempered and intolerant at work. He always tells people at his seminars that the object is "to have fun," but when one person he is raking over the coals complains, "Dr. Deming, I'm not having fun," he leans back in his chair, smiles broadly and says, "I am."

Deming works as a consultant to private companies, but more people probably know him through his public seminars, most of which are run by Nancy Mann, who has a PhD in biostatistics. People are standing in line to get in. Deming mentions one seminar—500 vacancies, 3,000 applicants. There are 14 of these seminars a year in this country and England with 500 to 600 students each, and a waiting list of about 100 for each seminar.

"Students" is perhaps misleading. At a seminar I attended in Dallas, the people were mostly in their 30s and 40s—managers, engineers and technicians from major corporations in all types of business, defense contractors, officers of the Armed Forces, health-care insurers. Deming lectures morning and afternoon for the four days, sometimes from notes, sometimes from memory, but with a good teacher's sense of when the lecture is becoming too intense, as it did at one seminar when he tried to make the class understand that there is no true value of anything, that whatever number you get depends on how you count, and if you change the way you count, the number will change. People think the speed of light is a true value, Deming says, but it isn't; there were ten different published figures for the speed of light between 1874 and 1932. Then in his best professorial voice, which is deep and impressive, Deming quotes Galileo as saying, "If the speed of light is not infinity, then it's awfully damned fast." The class roars. The point is unforgettably made.

Deming wants American business and industry to prosper. "All I have to offer is to improve profit," he says, but his method is not easy to understand. The standard American corporate questions about quality improvement are, "What do we do? (But keep it simple)" and "How long will it take? (But keep it short)." With Deming what you do is continually improve, not in great leaps forward, but a little here, a little there, and it never gets any easier. You change the way you think, unlearn everything about management you've been taught, and develop an understanding of statistics and psychology, an understanding of how people learn and what makes them change, and an understanding of people's need to take pride and joy in their work. How many steps are there? No one knows. How long will it take? The rest of your life, but—here's the good news—you should start to see results in three to five years. Why should you do that? Because the people who have tried it say that it works. And not much does these days.

At the hotel, it's early evening, and his lecture is over. Deming is going to his room to rest before dinner, a rare concession to his age. He comes down the hallway, the same attractive, well-dressed young woman holding one hand, and a tall, striking woman, a seminar coordinator, holding his other hand, and they are skipping. Skipping! Three kids home from school. W. Edwards Deming, PhD, Consultant in Statistical Studies and Capitalist Revolutionary, wears a smile of the most childlike pleasure and delight.

In a meeting, Ed Deming gives the impression he's lost in thought. Although he *is* thinking, he's never lost.

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By Daniel Cohen

For happy campers, nothing beats the old rites of passage

This summer, five million youngsters across the land played ball, swam, hiked, teased their counselors—and upheld a national tradition

At 7:45 in the morning, 8- and 9-year-old members of Camp Airy's Unit A dash up the hill from their cabins. Fog blankets a valley far below, but the 450-acre summer camp in the foothills of Maryland's Catoctin Mountain perches above the clouds. As stragglers drift in, the camp's 78 youngest boys sit cross-legged in neat lines, then stand and recite the Pledge of Allegiance as the American flag creaks up the pole in front of them.

"How are you, little braves?" calls unit leader Joe Grolnic, a fifth-year counselor.

"Yo, Joe, we be totally awesome!" the boys yell back.

"Who are we?" Grolnic prompts.

"Apaches!" the group howls.

"Who has the biggest unit?" the wiry counselor demands.

"We do!"

"What do we seek?"

"Breakfast!" the horde caterwauls as the meal bell chimes twice.

Moments later nearly 500 campers and staff have settled at trestle tables in the screened dining room. The roar of voices is deafening. Members of Unit A are drenching scrambled eggs with ketchup and rolling toast into logs that they dust with sugar and devour.

Instead of joining in, I head for the coffee urn, too stunned by the spectacle to eat. Three merciful decades after finishing summer camp in New York's Catskills as an awkward failure at team sports, I'm back at "sleep-away" camp, flooded once again with worry that I will remain an outcast. A hungry outcast, too, because

Horsing around with the guys is only one of many popular pursuits that remain unlisted in camp catalogs.

But at places like Maryland's Camp Airy, site of this picture and most that follow, programs are fun, too.

Color photographs by Ben Boblett

Into every camper's life a rest period must fall. Jason Moon (foreground) and bunkmates take a breather between activities that can range from soccer to survival training. Speaking for his peers, Jason, 10, says: "It's fun to get away from parents when you're tired of them."

the platters of congealing eggs and chilling toast do not tempt me at all. Not until adulthood did I realize that solitary sports like swimming and cycling make me happy, and now I want to find out if conditions at summer camp have improved for nerds like me.

This time around, I already know I'm not alone. Some five million youngsters nationwide (25 percent more than five years ago) are attending 8,500 residential and day camps this summer, along with 330,000 full-time employees. The annual tide of campers, ages 5 to 17, takes part in an American rite of passage more than a century old, a phenomenon that has expanded worldwide. Summer camping, in fact, may represent one of the United States' most pervasive contributions to international culture (along with, say, music videos and T-shirts with sarcastic messages).

Though camping seems to have fossilized in amber several of my own anxieties, I soon rediscover at Camp Airy that the experience also preserves an immediate sense of well-being through primal sensations—smelling wet pine needles in the morning, trailing a flashlight's parabolic beam across a field to the latrine after dark, inflicting minor tortures on a bunkmate and complaining about the food.

"Camp isn't supposed to change much. It's outdoors generally, a closed community—people aren't coming in and out during that period. Traditions are important, so kids know what to expect," says Robert Lebby, director of a camp in Wisconsin. As a preteen camper I always knew exactly what to expect: being outclassed on a ball field by some mesomorphic monster.

For those luckier than I, summer camp delivers a form of personal salvation. "It was a big deal to fit in, but you got a whole other chance to make friends. I had counselors to look up to and met tough city kids. You could prove yourself away from home," recalls Deena Lahn, a '70s alumna of a Connecticut girls' camp. For others the pleasures of freedom are simpler: "They don't tell you to wear socks or that you can't cut the sleeves off your shirt," exults one Airy camper.

Sleep-away camp grew out of two indigenous customs older than the Republic. Religious camp meetings were a fixture of pre-Revolutionary and early-frontier social life for entire families (an evangelists' encampment in Kentucky drew 25,000 participants in 1801). And the sending of children to live elsewhere for a spell was popular, as well. In large families, younger offspring were commonly "put to" relatives or friends for schooling, as domestic labor or simply to reduce the household size.

But not until the latter half of the 19th century did a string of New England educators promote an outdoor sojourn as a character-building experience for the young. In August 1861, the first summer of the Civil War, Connecticut schoolmaster Frederick William Gunn ended the term by marching his boys 40 miles to the shore of Long Island Sound. For two weeks they glamorized the soldier's life in tents, followed dispatches from the front, splashed in the surf and told stories around a campfire. These gatherings, which be-

Though Daniel Cohen confesses to having been a less-than-joyful camper, this article has inspired him to write a book about the social history of camping.

came known as Gunnery Camp, continued until 1879.

Various teachers, physicians and social theoreticians followed by founding small camps, often with fewer than a dozen campers, that aimed to prove their pet theories. One of them, Ernest Balch, while a Dartmouth undergraduate in 1881, developed an urge to combat "the miserable existence of wealthy adolescent boys in the summer when they must accompany their parents to fashionable resorts and fall prey to the evils of life in high society." As a camp director he shared the lowliest chores and boasted that "we eliminated absolutely a servile class." In 1907 Susan Kingsbury, a Bryn Mawr professor, set out to prove that teenage girls could actually live outdoors in a communal setting for two whole months.

Such notions, along with the billowing bloomers that girl campers wore instead of long skirts, often won the founders public ridicule. One thing shared by nearly all of the first camps was a romantic dash of American Indian lore, courtesy of naturalist, author and illustrator Ernest Thompson Seton, who gave to camping its council rings, campfires, rituals of personal challenge, and names like Chewonki and Wyonegonic.

At the close of the 19th century, camping went from class to mass as settlement houses, religious groups, social welfare agencies and municipalities founded retreats to soften the harsh conditions that existed among industrial workers and in crowded immigrant districts. In a camp's first season, youngsters (like the original 12 at Airy in 1924) might spend part of the summer clearing fields for next year's play. Some agency camps first met at country estates lent by wealthy trustees, who measured success by how much weight the campers gained in two weeks (three to five pounds on average) and by how much English the immigrant campers learned. "Today we're doing that again, with Russian, Israeli and Ethiopian kids," says Asher Melzer, a 40-year veteran of the profession. "During my early years, nearly all my colleagues were social workers."

Counselor-aide Jordan Berman, 17, transports lizards from Airy's nature center back to their home in woods.

Marilyn Riffkin, arts and crafts director, applies plaster mask, which camper will paint in wild ways.

Brewing an antidelinquency tonic

YWCA camps began in the 1870s by offering young shop clerks and seamstresses a week's respite (as did Camp Louise, Airy's sister camp, which opened in 1922 under the sponsorship of a Baltimore foundation). Agency camps promoted startlingly diverse agendas, guided by belief in the curative powers of sunshine and hope that an antidelinquency tonic could be brewed in ten days out of the city. From that ferment came thousands of nonprofit camps, including those of the Camp Fire Girls, Boy Scouts and Girl Scouts, Fresh Air Funds, churches, labor unions and left-wing political groups. Whatever their ideology, nearly all perceived camp as a potent teaching method. "I still think I get

more into and out of a kid in two weeks at camp than in a year in the city," says Helen Brodie-Baldwin, a former counselor and director of sleep-away and city day camps for children from Harlem.

Turn-of-the-century educator Luther Gulick jr. typified the passion for social engineering that fostered the early growth of camping. In the 1890s he pushed the YMCA to take seriously its work in physical training, not just in evangelism. He directed the New York City schools' athletics program, designed urban playgrounds with Hull House's Jane Addams and in 1907 with his wife, Charlotte, founded Camp WoHeLo, whose triangle of "work, health, love" the pair soon incorporated as the motto of the Camp Fire Girls—the nation's first nonsectarian, interracial girls' organization, which eventually ran more than 120 camps. Gulick later joined Seton and Daniel Carter Beard in creating the Boy Scouts of America (SMITHSONIAN, July 1985).

Seasoned by John Dewey's philosophy of progressive education, which promoted direct experience as the most effective learning tool, camps in the late 1930s began to focus on interaction among campers. That focus helped turn the bunk or tent group into the basic social unit. The vogue for camp as a form of group work has since subsided into a generic philosophy of life expressed by one director as "learning how to grow up, learning how to care and share, and how to make friends." Or as a swim coach puts it, "There are people out there who might not be your best friend that you have to deal with." (I'm pretty sure I didn't learn how to grow up at camp, but I did make at least one friend—a goofy, genial boy whom I later saw unexpectedly at a '60s peace rally, his curly blond hair and toothy smile instantly recognizable after seven years.)

But these days, as camps have discovered in recent recruitment drives, healthy personality adjustment turns out to be not enough bang for the bucks (upwards of $4,000 per season at some). Campers (or their parents) now want more tangible byproducts: sports prowess, aerobic conditioning, musical skills, karate and—a summer vacation horror story—computer programming. And they expect such benefits to be delivered in shorter sessions. Summer, if once a swath of childhood leisure, now confronts the young with increased options, even demands: vacationing with family members who may be separated at other times, starting a job, attending lengthened school terms, maybe just hanging out at the nearest mall or theme park. "Many eight-week camps have split their sessions, four and four," explains Gary Abell of the American Camping Association (ACA), which sets standards for 2,200 accredited camps nationwide.

These changes in camps convey a snapshot of national life. At one end of the social scale, a prospering girls' camp recently raised a high fence to prevent intrusions of parents involved in custody disputes. Helen Brodie-Baldwin, who is now ACA's treasurer, describes the other end: "You incorporate kids who are homeless or come from environments besieged by drugs or have academic problems." Camping isn't universally accepted among ethnic minorities, she notes. "Some Hispanic and Asian-American families don't really want to send their kids away. It's a cultural value."

And yet there is a tradition of summer camping among minorities. In the 1920s, for example, Alberta Kline, a community organizer who was a disciple of educator Mary McLeod Bethune, took small groups of girls from Harlem tenting on Staten Island, and social worker Daniel Taylor led teams of boys on outdoor work projects. Based on those programs, the New York City Mission Society, an old-line Protestant charity, in 1929 bought 650 acres in the state's Shawangunk Mountains and founded Camp Minisink, which grew to host 400 children at a time; it numbers singers Diahann Carroll and Eartha Kitt and dancer Paula Kelly among its alumnae. The camp in turn gave birth to Minisink Town House, a city-based leadership and recreation program. Across the South, in the era of racial segregation, the Phyllis Wheatley YWCA ran camps specifically for black children (opposite).

From summer camp to corporate retreat

Sleep-away berths for poorer minority youths have become scarcer. More than 2,500 camps—about 1 in 5—have closed since the mid-'70s; those of nonprofit agencies have been especially hard hit. Camps close to major cities have become prime targets of real estate development, with multimillion-dollar offers for their waterfront acreage. And liability insurance, maintenance and food costs have skyrocketed. "You're off having a wonderful life and everybody is hounding

Dressed for a swim, Washington, D.C. youngsters were pictured in the early 1930s on a beach outing at Camp Clarissa Scott on Chesapeake Bay, one of many Phyllis Wheatley YWCA camps for black children.

At a health camp in the nation's capital in 1933, tubercular children meet Senator William King of Utah.

American Indian lore played—and plays—a strong role in camp rituals, as these 1936 Maine campers attest.

A real rescue? No, only a test. Both lifesaver and victim are enrolled in the Red Cross training course.

At the pre-breakfast lineup, the youngest campers get psyched up for action, scheduled and unscheduled.

you for the property," laments camp consultant Edie Klein. Among the casualties: Camp Willoway, my alma mater in upstate New York—it's now a corporate retreat.

But there is expansion, too. Day camps, including 1,300 run by the YMCA and YWCA, have grown to fill the need. And camps, both day and sleep-away, have become bastions of environmental education, with programs ranging from Airy's Earth Lodge—a cozy collection of garden snakes, tiny turtles, preserved insects, and nature guidebooks—to rigorous "trace-free" camping (no fires on the forest floor) and, at one Colorado Y camp, a workshop on the solid-waste crisis.

And, as I'm finding at Airy, where there are third-generation campers, the sleep-away formula for growing up is deeply woven into the nation's experience. Even grown-ups want to get into the act again, with adult camps that indulge fantasies of being a rock star, escaping parenthood for a weekend or simulating a space mission. There are specialty camps, too, for young sters with special needs—the blind, deaf, cancer-stricken, and emotionally or developmentally impaired.

Back at Bunk 27 after breakfast, the 8-year-olds seem grafted onto one of their counselors, Steve Crossman, a 20-year-old biology major. One tries to hang from his shoulders, another entwines himself in the counselor's arms, a third tousles his hair. Here's something that most kids definitely do not have at home: an authority figure younger than their parents, possibly more athletic and certainly closer in cultural outlook. Counselors understand the power of this interim kinship. "You're their parent, brother, sister, friend and dog," observes Crossman.

Older campers discuss pressing concerns with their counselors: "Does God exist? Is Paul McCartney dead?" as one 16-year-old counselor-aide at Airy says. But they may also confess to experimenting with drugs, seek advice on dating or debate the abortion issue. I remember no weighty confiding in my own bunk counselor, Bob, an angular and amiable college student; I just wanted to grow up to be as confident, suave and strong as he was.

The realities of bunk cleanup can strain even so idealized a relationship. Though rested and fed, Bunk 27's campers move among the 13 iron cots and

A lefty gets ready for the big one. Of all the camp sports available, plain old softball is still king.

Colonial-style dressers as if in a trance. "Pick up the pace, Todd," Crossman commands. "Everyone has to show me five dust balls, at least." The troops clear rumpled bedding of cracker boxes, hair mousse, flashlights, tennis racquets, unfinished letters, baseball gloves and comics, then tuck in blanket corners. That morning's staff "general" strides in for inspection, peers around and declaims over a half-filled cup, "Bug juice with a bug in it—so gross!" He tells the boys to close their eyes and count to 181 by 9s, then examines their scalps and leaves them a posted rating of a stellar 9.6 for the day.

Each week the bunk with the highest score wins a prize—a pizza party and choice of film on the VCR. The rewards themselves alarm traditionalists, who at more rustic camps ban care packages and consumer electronics in favor of camp-grown produce and singing. "We have a big corn feast in late August, with vats of boiling water right out in the field—as much of the fresh corn as you can eat," boasts Ross Jameson, second-generation owner of a ranch camp in the Sierra Nevada.

But with a couple of days' worth of camp food under my belt—say, a dinner of soggy subs with grayish "steak" chips and stingingly sweet fruit punch—I begin to share the kids' obsession with ordering in. I've been cadging strawberry shakes from the counselors' cabana, and an oily slice of pepperoni pizza acquires charms it rarely has in my neighborhood. The march of merchandising hasn't made culinary purity any easier for the camp, either. Until two years ago, the town of Thurmont, a mile away, was fast-food-free. No longer. For the campers, a delivery from any of the burger-chicken-pizza pushers represents a powerful incentive.

Then there's candy from home. A bunk poll is unanimous: the best stash belongs to a boy recuperating from a severe bout of homesickness—he has boxes of hard candies, and bags of candy corn, jelly beans, gummy bears, mixed nuts and gourmet lollipops. Airy, like many camps, discourages such nutritional sabotage, but short-circuiting a potential epidemic has its own exigencies. "Homesickness is like the flu—it's contagious," sighs Crossman.

Every camp has its own cure: let the sufferers call home or absolutely don't let them call home. Plan B

Neatness may count, but not to the camper whose bunkmates tried in vain to get him to clean up.

protects parents from hearing a probably embroidered tale of woe. "I almost vometed at some meals because They made me eat so much. I hear Them say We're not going to give Her any more milk. When can I come home?" a forlorn camper once pleaded by mail. After bucking up wavering parents, one camp administers this advice to the homesick: "Get busy, you can overcome it, we guarantee it." The lachrymose I, of course, had a colossal case, weeping at the camp office my first mornings there. Somebody (revered counselor Bob?) must have got me swimming in the lake in time. I stayed and, yes, went back a second year.

After cleanup, I brace myself to confront athletic combat. There's a noisy game of basketball under way on a covered court, and a wicked line drive whistles past me from an adjacent diamond. At tennis clinic, a group begins a round of calisthenics, including 20 sit-ups, with a desultory air. "I'm doing neck-ups," announces one lad, minimally folding his slender frame as his mates begin swatting the ball back and forth. Hardly cutthroat competitiveness, so far. At the pool, Sybil Kessinger is teaching 12-year-olds to back dive. "You see the water and then you fall," she advises. One timid diver fails to go over on five tries. "Go, Waxman, everybody's cold!" the others bark from the edge. There's applause when the reluctant one arches backward into the pool.

But campers loping down the steep hill that separates bunks from playing fields provide little reassurance that things have improved for nonsporting types. "Is sports a big thing? Sports is *everything*!" declares Doug Mintz, a counselor-aide. That's intimidating enough at a generic camp, but at one of the specialty sports camps staffed by pros, the ethos is strictly athletics-to-the-max. Campers may find themselves treated with all the tenderness of a farm team during spring training. "They were pretty good at teaching baseball, but they weren't very friendly," sighs a 13-year-old shortstop after a grueling week at a major-league baseball camp.

Boiling spaghetti in the prow

Judging from recent program changes at hundreds of camps, though, America's youth have developed an unslakable thirst for physical challenge, ranging from whitewater rafting and weeklong canoe trips to rock climbing and obstacle courses. "High challenge once meant canoeing around the lake in four hours," says Jean McMullan, a camp director in Maine for 43 years. Instead, she has introduced adventures that promote team effort and teach outdoor survival skills, like seven-week, 300-mile backpack hikes and rigorous canoe trips to coastal islands. On such an outing, some 10-year-old girls forgot the cook pot and had to boil spaghetti in the (aluminum) prow. Playing squash was enough to faze me.

To my relief, not all suburban sophisticates crave such estival limit testing, as the wish list proffered by a cluster of girls I meet near the soccer field at Camp Louise makes clear. They dream of air-conditioned bunks, bigger dresser drawers, an additional "lazy day" and (girls after my own heart) no sports—"We might break a nail." Nonathleticism apparently plagues girls' camps. "We get lots of prissy campers who bring a suitcase of makeup and a blow-dryer," reports one dissenter at a Girl Scout facility in New Jersey. "But that's not like camp; it's supposed to be earthy, messy, playing with bugs."

At least some camp directors are attuned to the market for creature comforts; $20,000 (and up) promotional videos suggest that camping can include the amenities of Club Med, with such motorized play as jet skis and all-terrain vehicles. Despite the glitz, the stress on near-luxury oddly evokes an era 50 years ago

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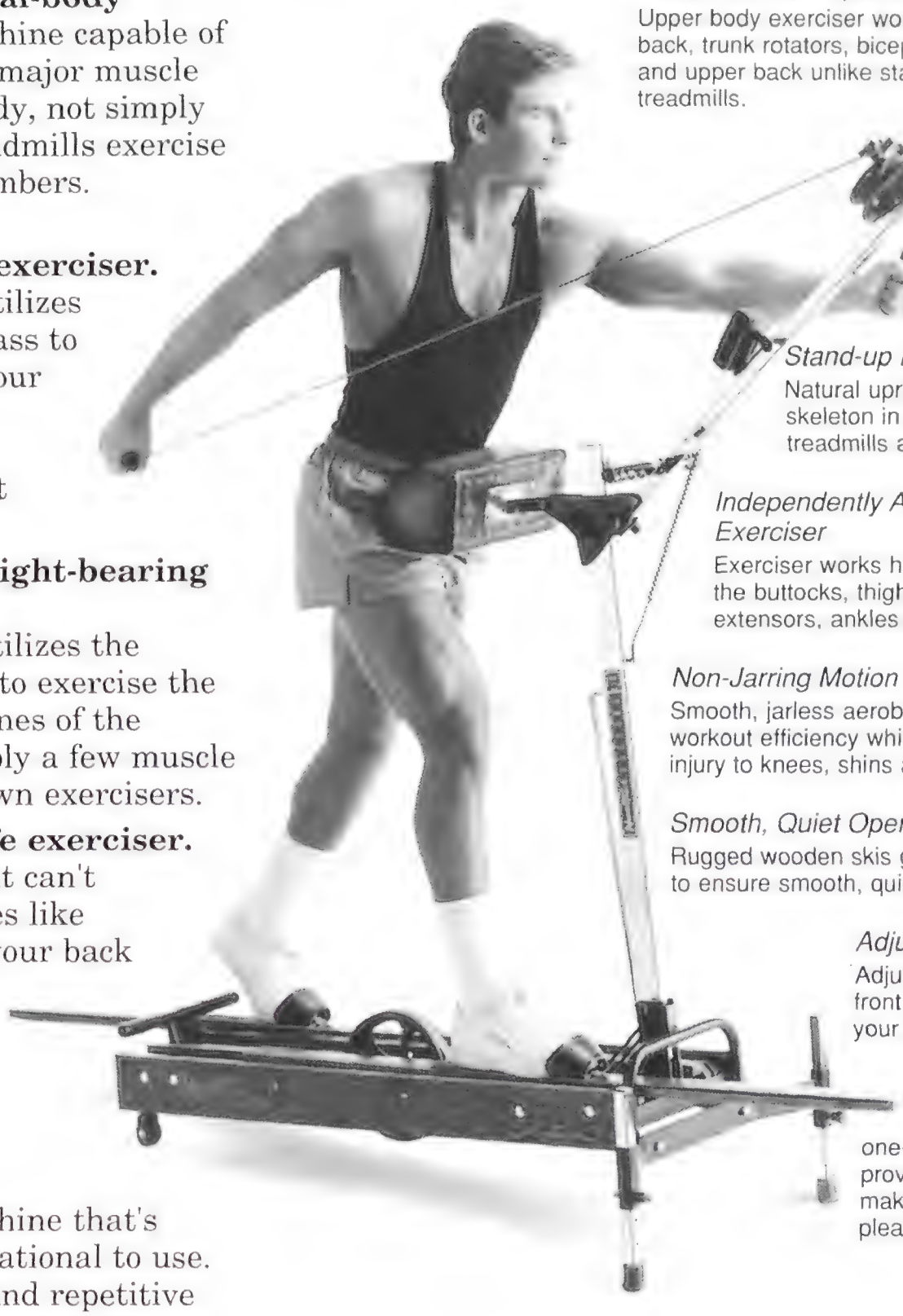

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Happy camper Amanda Rosenberg is flanked by "big sisters," who guided her during Camp Louise days.

when aristocratic girls' camps touted their deep artesian wells, screened porches and white tablecloths. But Camp Louise director Maureen Woolf, a high school science teacher, has another mission: "This was mostly a performing arts camp when I came, but I'm a jock and worked to turn it around. I didn't like all the superstars being the performing artists. Now we have swim shows and soccer matches."

In many cases, of course, campers devise their own hierarchy of accomplishment, namely, how many rules they can break and get away with it. Piping the *William Tell* Overture through the campwide PA system at 5 A.M. ranks high. So does putting a counselor's bed on the bunk roof. Or making showers turn ice-cold by coordinated toilet flushing and tap opening. "Two of us can do it if we move fast," one perp confides. Some of the most impressive achievements are those inflicted on a cabinmate, like giving a waffle-belly (required tools: tennis racquet and hairbrush) or melting a plastic radio with copious doses of bug repellent.

Reassured that grass-roots initiative will always provide alternatives to the official agenda, at afternoon rest I still worry about the fate of nonathletes at boys' camps. Then I meet Howard Miller. While the others play a noisy round of porch ball at Bunk 27, Howard, a slight, crew-cut 9-year-old with eyes magnified behind horn-rims, sits quietly to one side. "I'm not good at porch ball," he says matter-of-factly.

"He's not good at *sports*," a burly bunkmate opines, hanging batlike with his knees hooked over the railing. I cringe, but not Howard, who maintains an observant calm. "I like the pool and reading," he retorts evenly, but he does have some comments about his mates. "Some of 'em do weird, sick and dumb things. I hope some of 'em don't come back," he says with asperity. But will he return? "Definitely." Then, singing softly, Howard sits in the bunk hammock, on counselor Steve Crossman's lap. I'm suffused with hope for us nerds of summer.

Suddenly the calm is shattered as Crossman leads the bunk in creating chants for that night's rally for Airy's 65th Olympiad, a tradition apparently as old as the camp. It's no longer called a "color war," but the entire population has been divided into two teams, and Bunk 27 is among the Greens. Crossman and a co-counselor incite the campers: "Blood and guts! Get psyched!" Thirteen reedy shrieks respond: "Go, go Green Giants and—*Ugh!*—beat the Whites!"

Later, the 200-member Green team gathers around a bonfire and cheers as counselors in verdant painted faces, foliage wreaths and dyed sheets writhe in a line dance, shouting "We're the Green Machine!" Then one staff member gives a pep talk about the other team: "They're not our enemies, OK, but they're our opposition. The idea is not to lose control. If you're hit, try not to hit back."

In the annals of color war this is mild stuff, but it's an incongruity at a camp like Airy, with its strong social-work tradition. At some camps such events can go on for as long as a week; helicopters have even been hired to drop in senior team members at the start of hostilities. "I remember amazing eight-hour games of capture-the-flag, and it was literally like war," reflects a former camper at an elite art camp in Connecticut.

But a growing number of camps apparently eschew such instigated mock combat. "I made my reputation on the noncompetitive," says Joe Kruger, who founded the Massachusetts boys' camp Mah-Kee-Nac in 1929 and ran it for 55 years. "There's no color war, no softball teams and no prizes or awards. We have eight teams in our Olympics, so half the camp doesn't lose—*most* of the camp loses."

"Inside! Into bed! Now!"

As Airy's counselors learn, there may be practical as well as philosophical reasons for curtailing campwide color-war hype, at least right before taps. Back at Bunk 8 after curfew, one boy announces that he plans to sleep on the porch. Three others drift toward the basketball court "to watch the eclipse." Mysteriously, most of the bunk have decided to move their mattresses outdoors, where a hoarse counselor ineffectively yells, "Inside! Into bed! Now!" A ringleader, sentenced to sit on a nearby picnic table for a half-hour, asks once a minute if time's up.

Into the fracas strides Jonathan Smyth, back from the counselors' snack bar. He flips on the light, closes his eyes and, in a Scottish accent, softly exhales "Gen-

tlemen?" He has the knack of projecting authority that the boys respond to. Smyth explains, "I try to make them internalize discipline." He is a sports studies major from Edinburgh who has worked at Airy for three of the past five years.

Smyth is one of 42 counselors from Great Britain hired by the camp, largely because of their skills and the intercultural experience they provide. Nowadays, U.S. camps import as many as 18,000 counselors per season from 75 nations, including this year, for the first time, 300 from Eastern Europe. The practice often leaves these visitors slightly agog at the lifestyle of so many American youths. "They have much more stuff than young people back home—electronics and expensive sporting gear," a British counselor remarks; but he doesn't envy Americans their high-pressure childhoods. An even greater surprise for foreign counselors may be the rudeness they must endure from irreverent campers. "Counselors from African and Asian countries are especially shocked by the retorts. We try to prepare them for that," advises Dwight Call of the YMCA's international counselors program.

If summer camp disorients foreign counselors, they will only be joining the legions of campers and staff whose own first sleep-away days made them feel miserable. In fact, misery turns out to be what adults tend to burnish into peculiar highlights. "Campers' parents always remember the adversity and hard times as much as the good, and those are just as important," says Jean McMullan. At least a bad experience is one the camper can claim as his or her very own—like the compound fracture of her arm that one girl sustained last summer in New Jersey. Days earlier, her impeccably coiffed mother had stormed through the rustic campground demanding to know if every cabin had plumbing and where the laundry was done. As the injured girl was littered out, she vowed "I'll be back!"

Home from Airy at last, I get a surprise while screening the 8-millimeter movies my father had made on parents' visiting day at Camp Willoway, 30 years ago. There's chunky, brush-cut me—full of smiles—swatting at a handball, dribbling on the basketball court, even (can it be?) swinging a bat. But I'm not going back. Not unless they offer me a spot on the swim team.

A few days' worth of soggy towels and swimsuits fill sagging clotheslines near cabins at Camp Airy. Day and night, the stuff hangs outside till it's dry because inside, dampness brings the camper's curse: mildew.

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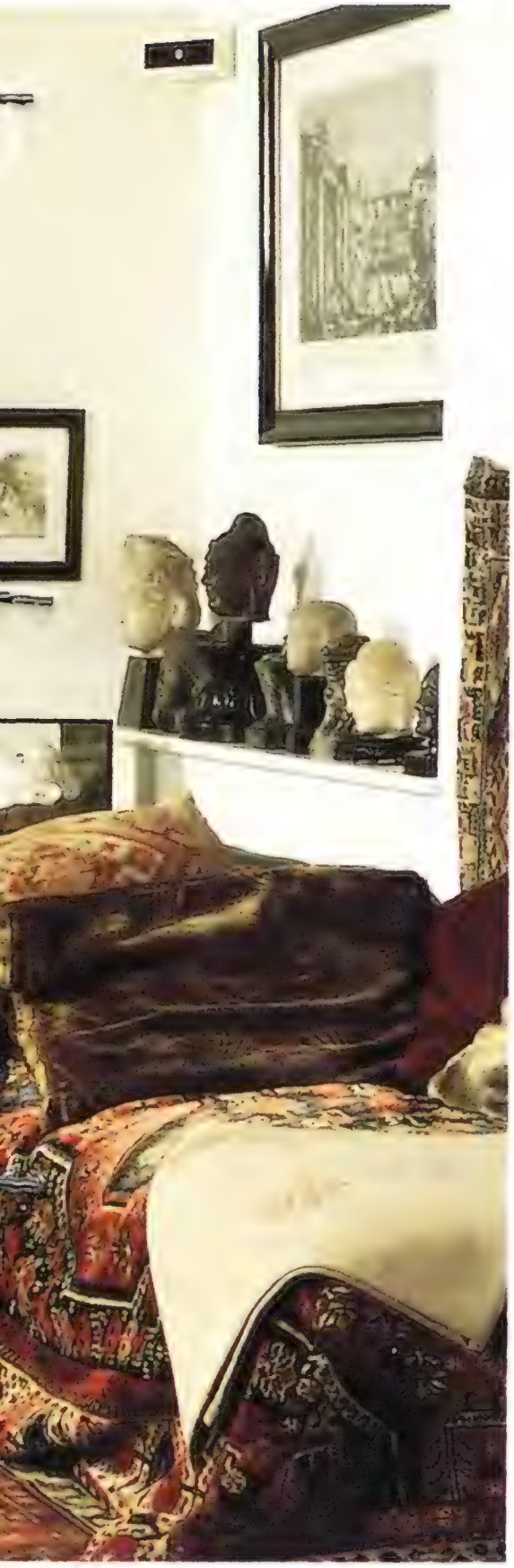
By Helen Dudar

The unexpected private passion of Sigmund Freud

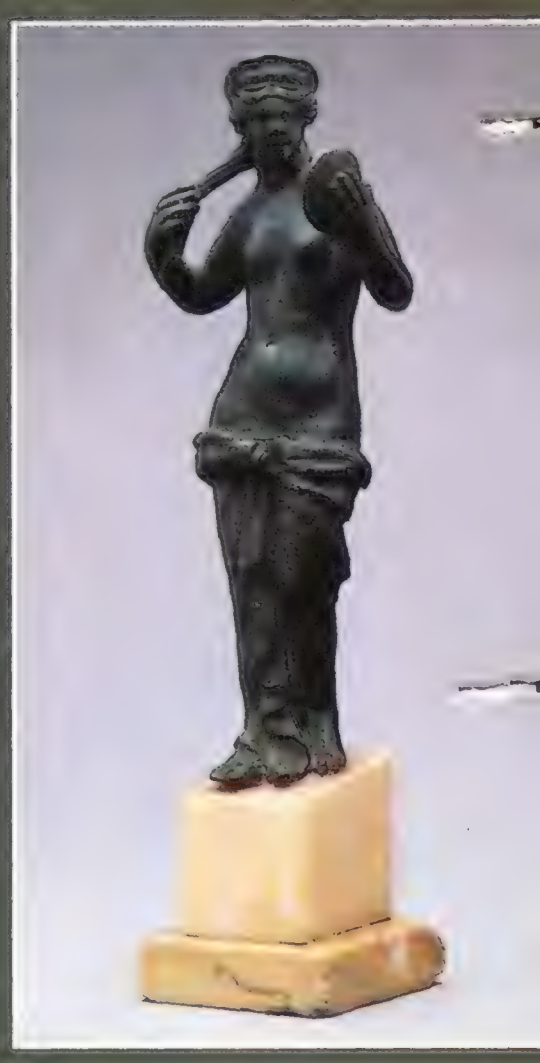
The psychiatrist known as 'the archaeologist of the mind' was also a keen collector of the art and artifacts of many ancient civilizations



Freud was about 50 when the photograph at right was taken in his Vienna study. The large sculpture to his left is a reproduction of Michelangelo's *Dying Slave*. Freud later purchased only original artworks.

No matter how many times you have seen photographs, the room at first sight—and second and third—jostles and jolts the eye. Here, on a peaceful suburban London street, in his last home, is Sigmund Freud's study, the place where he spent his last year and where he completed his last book and where, on a September day in 1939, he died. In the warm domestic surround that summons up turn-of-the-century Vienna, here is the couch covered with a good Persian rug, and just behind it, the green armchair where Freud famously positioned himself to escape the patient's direct gaze. Here are photographs of friends and colleagues. Here are the well-used books of a man who read widely, deeply and ferociously—full sets of Goethe, Shakespeare, Balzac and Anatole France, a wall of volumes on archaeology.

And everywhere the astonished gaze wanders, here are emblems of the vanished past. Terra-cotta and bronze figures and fragments of figures throng the shelves. Mummy masks hang from a bookcase and lie under glass. Ancient Greek pots, Egyptian scarabs, Roman oil lamps, Sumerian seals that have survived for more than four millennia—forests of these things repose in serried ranks in vitrines. The cherished pieces crowd the edge of Freud's desk, an attentive,



Sampler of the Freud collection, from the left: a Roman bronze, the goddess of love; Egyptian Isis and the infant Horus; wood-and-jade Chinese table screen; and from Greece, a libidinous terra-cotta sculpture of Eros, the god of love.

questioning audience. Squirreled away in drawers are still more objects, odds and ends too small or too difficult to display. Infinite riches in a little room you could say—these are Freud's antiquities, 2,300 of them by the best estimate. In the felicitous phrase of one of his biographers, "the archaeologist of the mind" had an unappeasable appetite for the entombed treasures of other times.

The sturdy brick house at 20 Maresfield Gardens in Hampstead, in northwest London, became the Freud Museum in 1986. Last fall, a sampling from the collection began a 30-month tour of the United States, crisscrossing the country to settle for weeks at each of 13 galleries. (The exhibition schedule for this year includes the University of Colorado, Boulder, July 6-August 18; the University of Miami, Coral Gables, August 30-September 30; and the University of California, Irvine, November 11-December 16. In 1991, the show will be at Stanford University, Stanford, California, January 15-March 17; the New Orleans Museum of Art, April 21-June 3; the University of Michigan, Ann Arbor, June 28-August 16; the University of Houston, September 7-October 13; the Jewish Museum, New York, November 7-February 18, 1992. In 1992, the show will be at Boston University, February 26-April 6. The exhibition is sponsored by CIBA-GEIGY Pharmaceuticals and the National Endowment for the Arts.)

It is an elegant little show designed for the intimate spaces of smallish museums, a digestible portion of the art that absorbed this great man's attention and spare funds for more than 40 years. Entitled "The Sigmund Freud Antiquities: Fragments from a Buried Past," the exhibition was formally intended to mark the 50th anniversary of the death of the founder of modern psychiatry. More aptly, it celebrates his work and evokes his ideas and passions.

"The Freud Antiquities" consists of 65 pieces, embracing a range of ancient times and places that held Freud's interest. Not surprisingly, many of them represent humans or animals—gods and sages and magical figures that embodied the mythology of ancient religions. Aptly enough, the show usually begins with Eros and ends with Thanatos—visual examples of Freud's conclusion that civilizations evolved through the drive to live, struggling eternally against the urge to die. It offers a sphinx, whose mystery was fatally unriddled by Oedipus; the Theban king would, in turn, bestow his name on what Freud decreed was a universal force of infantile sexuality, the Oedipus complex. It displays a balsamarium, an Etruscan container for perfumed oil, a favored piece that sat on his desk. One side wears a female face, the other a male visage, a double image for this master of dichotomies who found dualities everywhere he looked, and who saw bisexuality as basic to human nature.

The show has surprises. It was to be expected that Freud would be drawn to Egyptian, Greek and Roman imagery mirroring Freudian ideas and theories. On the other hand, he also found his way to the less-familiar, less-fathomable art of the Orient. And if the symbolism of ancient human and animal forms compelled his interest, he could also allow himself to own beautiful old jars and bottles that reflect nothing more than the master glassmaker's art.

And he could be fooled. The exhibition cases house a few forgeries; two are the kind of pieces that the modern museum world labels "airport art"—mass-marketed souvenirs produced for tourists. Scattering a few fakes among the authentic works was a calculated gesture, an essential ingredient of this homage to the whole, complex persona—scientist, thinker, explorer of the human psyche, medical practitioner, humanist, family man and, rather touchingly, obsessive collector who, like collectors almost everywhere, would sometimes succumb to a longing for a questionable object simply because he loved it and had to have it.

The exhibition is the joint effort of Lynn Gamwell, director of the University Art Museum of the State University of New York at Binghamton, and Richard Wells, director of the Freud Museum in London. Modestly scaled though it is, "The Freud Antiquities" was meant to represent the full range of the collection, including trivia. As Gamwell explains, "We did not want it to be simply honorific; we wanted to reflect the fact that he made mistakes." Actually, the low end of the selection stops short of her co-curator's assessment; with charming candor, Wells is apt to tell a visitor to the museum that while Freud's esthetic sense was a good deal more refined than friends and family gave him credit for, he did wind up with "a certain amount of junk and tat."

It should hardly come as a surprise that Freud understood better than many collectors what his buying meant on the simplest level and in the most personal terms. It was "an addiction," he once told his personal physician, Dr. Max Schur, and it was rivaled in intensity only by his need for nicotine. Plainly, at least one of those habits was necessary to his sense of well-being. Cigar smoking afflicted him with cancer of the palate and, beginning with his first surgery in 1923, would ever after be a relentless cause of suffering. Collecting was, at least, a benign addiction. It offered the good doctor the kind of comfort known to everyone who has ever succumbed to the desire to buy something—as a reward, as an antidote to a spell of low spirits, as a remedy for boredom, as an amulet against anxiety.

Freud's attraction to objects of antiquity was layered with meanings, but there is a touching simplicity to his report on a purchase he made just after an especially unhappy medical episode. He had been fitted with a new artificial palate after yet another encounter with oral surgery. The prosthesis impaired his speech and put an end to his public lecturing; just inserting and removing it was a harsh effort. Reporting his medical news to his colleague and friend Max Eitingon, he wrote, "I got myself an expensive present today, a lovely little dipylon vase—a real gem—to fight my ill humor. (Spending money is indicated not only for states of fear.)"

Freud bought his first art in 1896, about the time his

ailing elderly father was not far from death, or possibly just after Jacob Freud had died. No one is quite sure. If you share the Freudian view that there are no accidents or coincidences in human affairs, then explanations are in order. It has been suggested that buying copies of art he admired was both a way to console himself in a time of mourning and the representation of a kind of relief universally felt by a survivor.

The earliest purchases were replicas of sculpture of the Florentine Renaissance. Very soon after, Freud began to buy originals of classical sculptures. Like any serious collector, he was finicky about authenticity. Most of his purchases were checked out at the Vienna Kunsthistorisches Museum. If an authority concluded that a piece was a forgery, it was given away. But the experts were not always certain and not always correct.

Not surprisingly, Freud's partiality for remnants of the distant past was linked with powerful memories. Before his medical schooling had begun, he had absorbed and enjoyed a classical education; the old Greek and Roman civilizations and even-older cultures they drew from were familiar territories for him. It is hard to imagine the adult Freud coveting another man's triumph, but the contemporary figure he envied was Heinrich Schliemann who, in Freud's youth, found and began to dig up the lost city of Troy.

The objects Freud collected came from sunny lands that he loved or longed to visit, and they held a mysterious grip on his imagination. To a colleague, he once wrote of "strange secret yearnings" that rose up in him when he studied the art he owned. Perhaps, he said, these feelings stemmed "from my ancestral heritage—for the East and the Mediterranean and for a life of quite another kind: wishes from childhood never to be fulfilled and not adapted to reality."

For the professional brethren, on the other hand, the significance and weight of Freud's collecting dwells in what the psychoanalytic literature calls "the archaeological metaphor." Freud began collecting his antiquities during the last decade of the past century, while he was in the process of self-analysis, the painful and meticulous exploration of his own unconscious. The effort would lead to a new method of dealing with emotional distress, to the science or art of psychoanalysis, to what has been more lightly described as "the talking cure." He would write and he would tell some of his patients that the search for suppressed memories they had launched, the effort to rummage through buried experiences "layer by layer," was not unlike "the technique of excavating a buried city." The message to the patient was: dig.

New York writer Helen Dudar, a frequent contributor to these pages, wrote on the drawings of Jasper Johns in the June 1990 SMITHSONIAN.

Like the dualities in Freud's own ideas of human experience, the metaphor is at once relevant and beside the point. After all, what sensible man would assemble more than 2,000 objects for the sake of supporting an analogy when a dozen would have made the point? Moreover, the Freud collection includes 100 fine pieces of antique glass; as the museum's Richard Wells points out, "there's no intellectual mileage in ancient glass." Freud bought steadily the way collectors often buy: for the joy of buying, for the pleasure and for the childlike, almost primitive sense of power that ownership of valuables evokes. Sometimes he bought in a way that fed another artery into his fantasy life. Searching the Hampstead study for material to be used in the exhibition, Lynn Gamwell pulled open a drawer and found it crammed with etchings and engravings, more than 50, many of them of archaeological sites, including an 18th-century Piranesi. There was little wall space left in Freud's study, but clearly he could not resist prints of digs that appealed to him.

Treasure smuggled by a princess

Colleagues and friends learned to look to Freud's interests. When a Roman cemetery was discovered buried under farmlands in central Hungary in 1910, Sandor Ferenczi, a fellow collector who practiced psychoanalysis in Budapest, shared the booty. Lamps and beads from the site were bought for Freud's collection. In later years, Princess Marie Bonaparte, who had been his analysand and became an important friend and benefactor, seldom arrived from Paris without a prime piece. She was also willing to break the law on his behalf. When it looked as if he might have to leave the collection in Vienna, the princess smuggled out a treasured piece, the fine little figure of Athena that is in the show.

In our time, the last knowledgeable witness of Sigmund Freud's buying habits was Robert Lustig, a small, round, rosy man who died last February at the age of 83. In Vienna, Freud was the first and, 13 years later, the final customer for his antiquities.

As a boy, Lustig had haunted the galleries of ancient art at the Vienna museum. In 1925, at the age of 19, he somewhat reluctantly went to work in the family watchmaking shop. Still, he prowled the auction rooms and one day triumphantly came back with a bargain, a dozen Egyptian alabaster urns, miniatures no more than three inches tall. To his father's angry dismay, he pushed aside some watches in the window to make room for his find. There they were spotted by a passer-by, a small bearded man who walked into the shop to ask about them. He liked the price.

"Bring them to my house, and I will pay you there," he told the young man, fishing a card out of his pocket.

Dealer Robert Lustig poses proudly in front of his store in Vienna in the late 1920s. Lustig sold Freud, his first and last customer there, many works of ancient art over a period of 13 years.

Freud's interest in ancient art and artifacts was wide and deep, and arose from his studies of the life and customs of early civilizations. From left: a Roman bottle, an Egyptian wisdom deity and another Eros.

In Greek myth, riddle of winged sphinx was solved by Oedipus, for whom a basic Freudian theory is named.

The card announced he was Professor Freud, a name Lustig vaguely knew was famous. When Lustig arrived at the apartment at Berggasse 19 with the little urns, he was overwhelmed by the study: "I had never seen so many things in a private collection." He left with his money and the professor's instructions, "Whenever you find something, bring it up to me."

In a few years, Lustig had his own shop on Wieblinger Strasse. Although it was Freud's habit to route his daily walk through the commercial districts where he knew he would pass antique stores, Lustig usually brought his merchandise to Berggasse 19, sometimes waiting with patients in an outer room until Freud could see him. He came at least once a week and sold something nearly every time. In keeping with local custom, Freud always bargained; the price always came down a trifle. But he was not practiced at pretending indifference.

"When I saw on his face that he liked something very much," Lustig confided, "I charged him a little more. But he took me down anyhow."

Far from rich, Freud was usually a cautious buyer. Some of the money he used for antiquities was unexpected cash—fees paid by patients who knew that for an hour every afternoon Freud could be consulted without an appointment. But in Vienna in those days, collecting classical pieces was not an expensive hobby; the high-priced objects in the shops were from the Gothic, Renaissance and Baroque periods.

At least once, when he was short of cash and wanted something that Lustig was offering—"I have to have it!" Lustig recalled him exclaiming—a trade was arranged. The piece Freud longed for was an Egyptian coffin mask. He proposed that he pay half the price in cash and the remainder with pieces that were duplicates in his collection. "He opened a drawer, and it was full of Greek and Etruscan mirrors," Lustig recalled. The young dealer went off with three or four mirrors and a small prehistoric Greek terra-cotta figure, a seated monkey, which he took to the museum. The curator of the Grecian department gave him an Etruscan bronze in exchange for the piece and put the monkey on display in a glass cabinet of its own.

Owning a piece of sculpture that warrants museum display of that kind would suggest that the owner had a better-than-fair eye for quality. Of course, Freud occasionally bought a fake; even museums wind up with fakes. To Lynn Gamwell, co-curator of the show, the quality of much of the collection is impressive. Still, friends and strangers tended to be patronizing about Freud's art interests. One of his major biographers, his colleague Ernest Jones, was advised by Ernst Kris, an art historian who became an analyst, and by Freud's son, Ernst, an architect, to avoid the subject entirely. Since Freud had little esthetic appreciation, they argued, there could be nothing worthwhile to say.

As a theoretician, Freud certainly was more interested in the role of an artist's fantasy life in the creation of art than he was in esthetics. Still, in the end, the explorer of the human unconscious seems to have thrown up his hands at the prospect of divining the secrets of creativity. "We have to admit," he wrote in his book on Leonardo da Vinci ". . . that also the nature of artistic achievement is inaccessible to us psychoanalytically."

Freud's written views on art nevertheless angered and disturbed a good many people, among them, famously, the distinguished British art critic Roger Fry. His supposition was that Freud did not understand the basic elements of esthetic pleasure—ideas of mass and line, light and shade, space and color.

The pursuit of simple beauty

In Freud's defense, Ernest Jones wrote that there was evidence to show that he had "a keen sense of simple beauty, notably in the sphere of nature, and also that he had some capacity for esthetic appreciation." After all, Jones argued, no one would have spent year after vacation year wandering through the art galleries of Italy without some feeling for the art and architecture he was encountering.

Freud's days were crowded. There were patients to be seen, books and papers to be written, professional meetings to be organized, defections of the once faithful to be dealt with, and hundreds of letters to be composed—in his final year in England, 880 reached

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1983 Car and Driver Ten Best List

1984 Car and Driver Ten Best List

1985 Car and Driver Ten Best List

1986 Car and Driver Ten Best List

1987 Car and Driver Ten Best List

1988 Car and Driver Ten Best List

1989 Car and Driver Ten Best List

We could go on and on.

1990 Car and Driver Ten Best List

In the eight years *Car and Driver* magazine has presented its Ten Best list, only one car has been chosen every time. The Accord.

HONDA

friends and family and admirers. But there was always time for the collection.

Freud kept a journal, his "Chronik," in which he briefly noted some daily events. The last Chronik, the only one to survive the move from Vienna, consists of 20 unbound foolscap sheets covering ten years—an odd document that museum scholar Michael Molnar is trying to explicate. There are perfectly clear, and chilling, comments. The final entry, on August 25, 1939, reports "War panic." And there are lines tinged with disappointment: "October 31, 1929, Passed over for the Nobel Prize." And there are tantalizing notes like "John D. Rockefeller Jr." Did he visit? Did he write? Molnar is still hunting for a clue.

New pleasures every few months

Freud seems never to have failed to note the acquisition of an important piece. Every few months, the Chronik reports a new pleasure. "Painted Chinese lady," says the entry for March 17, 1933. "Ivory Buddha," he reports on May 7, 1934; coming as it did a day after his birthday, it could even have been a gift to himself. "Isis with Horus" is recorded on August 2, 1935; the piece, bought from Robert Lustig, is in the exhibition. Traveling from Paris to see him on October 29, 1938, Princess Marie Bonaparte and her daughter, Eugénie, did not come empty-handed. The visit is reported in Freud's usual laconic style with the note "bronze Venus"—another piece in the show.

Considering how much the collection meant to him, one of the surprises at the museum is the discovery that his antiquities were kept totally separate from the family's living quarters. Freud would sometimes carry a new object to the dinner table to examine and enjoy, but all of his treasures dwelt in the study.

Perhaps Martha Freud, a sturdy, conventional wife and mother who ran the house, disliked his alien stones. Possibly Freud persuaded himself that his antiquities belonged exclusively to his work. No one has quite addressed the question, although Richard Wells, whose career includes both the practice of psychoanalytical group therapy and the management of museums, is willing to guess that the arrangement may have represented Freud's careful division between work and family life: on the one hand, we have the radical thinker who suffered isolation, ridicule and want of advancement for his revolutionary views; on the other, there is the bourgeois paterfamilias who sired six sons and daughters, who loved children and dogs, who always came to the dinner table on time and who believed in mountain walks for the sake of health.

When Freud sat down at his handsome Art Nouveau desk each morning, the first thing he did was reach over and affectionately pat one of his stone "friends." They keep odd company in the museum. Amid these elegances stands a small souvenir figure of a porcupine, an undisguised piece of kitsch that some visitors are shocked to see, but one that represents a sweet moment in early psychoanalytic history. It was given to Freud in 1909 during his only visit to the United States. He had been invited to Clark University to receive an honorary degree and deliver a series of lectures. Before he sailed, whenever anyone asked about the purpose of his trip to Worcester, Massachusetts, Freud would announce that he was going to look for porcupines—to Europeans, exotic American beasts. For years afterward in psychoanalytic circles, the standard expression of anxiety about a looming event was to announce that you were going to look for porcupines.

Freud had surely never reckoned that the porcupine, the desk, the figures, the books, the rugs, would make one final trip with him when he was too old and too ill to be traveling. In 1938 Hitler's forces moved into Austria; soon a swastika was draped over the door of Berggasse 19, and Jews were set to work cleaning the streets with toothbrushes. The man reviled as a dangerous Jew and as the inventor of an insidious set of theories was in peril. Freud finally caved in to the urgings of his friends and family to leave the city. It took some pressure from friends of international stature to get him out, and also payment of a ransom to allow his valuables to leave. When Freud moved into 20 Maresfield Gardens, his son Ernst and the family maid, Paula Fichtl, had already arranged the objects in his study as closely as possible to the way they'd been in the Vienna room. His greatly loved daughter Anna, a distinguished analyst in her own right, who lived in the house until her death in 1982, left the place largely as it had been when her father died.

Somewhere in that room, stuffed into curio cabinets or crammed into drawers, are the last items Freud ever bought from Robert Lustig. One day in March 1938, warned by a policeman friend that the Nazis were "taking all the Jews to concentration camps," the dealer filled his pockets with a few small items from his showcase, closed his shop and headed for the Czech border on his way to America. But first he made a stop at Berggasse 19. He needed money, a small sum to help him get out of Austria. There was never a doubt in his mind that Freud would help, and so he did. Lustig left behind his pocketful of old pieces and went off with a little cash and the professor's good wishes ringing in his ears. "Lots of luck to you," he remembered Freud saying. "I have to go, too."

Egyptian mask of painted wood was once attached to a coffin lid. Freud had three such masks in his collection.

In his 1825 tome on taste, French lawyer-gourmet Brillat-Savarin concluded that you are what you eat; today, we Americans have a lot of tomato in us—it's the top crop of our 30 million home gardeners.

By Thomas H. Wolf

How the lowly 'love apple' rose in the world

For decades Americans thought them poison, but by 1840 we learned the truth and now we give tomatoes a world-class culinary rush

"Tell me what you eat, and I'll tell you what you are." Such was the fourth on the list of aphorisms published in 1825 by Anthelme Brillat-Savarin, the celebrated French lawyer-gourmet. Well, we Americans eat *Lycopersicon esculentum*—which, in case you didn't recognize it, is the tomato. No matter how you pronounce it, the tomato is, according to the U.S. Department of Agriculture, the favorite homegrown crop of four out of five American backyard gardeners. And that's saying a mouthful: 85 percent of the 30 million of us who are home gardeners grow tomatoes.

What all that makes us is hard to say, Monsieur Brillat-Savarin having long since moved on to the Great Gourmet Cuisine in the Sky. But clearly it makes the tomato a most tasty subject for further discussion. To wit: botanically the tomato is the ripened ovary of a seed plant. By definition that makes it a fruit. But here in America tomatoes are not fruit. Says who? Says no less an august authority than the Supreme Court of the United States.

The year was 1893. Ten years earlier the Tariff Act of 1883 had placed a 10-percent duty on "vegetables in

their natural state," but allowed fruits "green, ripe or dried" to enter the country duty-free. The Collector of Customs for the Port of New York, seizing the chance to do some collecting, announced that tomatoes were "vegetables in their natural state" and therefore subject to the tariff.

The importers sued, eventually arriving at the highest court of the land. There Mr. Justice Horace Gray, speaking on behalf of a unanimous bench, delivered himself of the following opinion (heavily larded with commas): "Botanically speaking tomatoes are the fruit of a vine, just as are cucumbers, squashes, beans and peas [a notion that may come as a surprise to many SMITHSONIAN readers]. But in the common language of the people, whether sellers or consumers of provisions, all these are vegetables which are grown in kitchen gardens, and which, whether eaten cooked or raw, are, like potatoes, carrots, parsnips, turnips, beets, cauliflower, celery and lettuce, usually served at dinner in, with, or after the soup, fish, or meats which constitute the principal part of the repast, and not, like fruits generally, as dessert."

This was not the only time that one branch of the federal government got itself into a pickle over tomatoes. Nearly 100 years later, in 1981 to be exact, one G. William Hoagland, then director of the Department of Agriculture's Division of Food and Nutrition Service, tried to meet school-lunch budget cuts that the Reagan Administration mandated by proclaiming that tomato ketchup was a vegetable, and therefore meet for young scholars' midday meals in place of other, more-expensive vegetables. But most Americans found this hard to swallow. Faced with public outcry and loud guffaws, the department relieved Mr. Hoagland of his directorship.

Hundreds of colors and sizes

Today, except for the potato, the tomato is America's most important commercial vegetable, both in yearly weight consumed (recently estimated at in excess of nine million tons) and annual yield (more than $1.4 billion). These figures do not include the huge outpouring from home gardens. It is worth noting here that the tomato grown for processing is almost a different vegetable from that grown for the fresh market. For example, a bright appearance is without doubt the fresh tomato's most important selling point, whereas color and luster count for much less with food processors. Information about the processed crop is readily available; facts about the fresh-market variety are often impossible to dig up.

Tomatoes come in hundreds of different colors, sizes and shapes, and are now being grown almost everywhere on Earth. Just in the past 20 years, world tomato production has doubled. In the United States, W. Atlee Burpee, the largest supplier of vegetable and flower seeds by mail, sells 30 varieties of tomato—the most popular being Supersteak hybrid VFN and Big Girl hybrid VF. Parenthetically, as many a happy home gardener has learned, the easiest variety to grow is the tiny cherry tomato. At the Tsukuba Science Expo in Japan (SMITHSONIAN, April 1985), it was reported that one especially fruitful plant produced 16,897 individual tomatoes.

The Tomato Genetics Stock Center at the University of California, Davis, has more than 2,750 genetic variants. Elsewhere researchers are even working on a breed of square tomatoes—the perfect companion for sandwiches made from standard slices of bread. The

In 1893 it took the U.S. Supreme Court to decide that the tomato was not a fruit but a vegetable.

Illustrations by Jack E. Davis

"Tomatoes can be stuffed, boiled, broiled, stewed, pureed, deviled, glazed, pickled, grilled and fried."

largest tomato on record is a 7-pound-12-ounce monster grown by one Gordon Graham in 1986 in Edmond, Oklahoma. (Yes, it's in the *Guinness Book of World Records.*) The tomato can be engineered to grow in a surprising range of climates and in almost any soil. The Israelis are growing tomatoes in the desert, using a combination of fresh and salt water. The results are said to be very tasty.

For years tomato growers looked for a cultivar (short for "cultivated variety") that could be harvested by machine. This required a skin thick enough to withstand buffeting by mechanical pickers, and a fruit-setting period short enough so that all tomatoes in one field would be ready for picking at the same time. The fact that few of them would be ripe was of little importance. The rocklike white-green balls thus harvested could be kept at a cool 55 degrees F and later gassed with ethylene to encourage them to turn red, eventually becoming the tasteless "plastic" tomatoes so favored by supermarkets—and no one else. (In a survey reported in a publication called *The Tomato Crop* in 1986, consumers rated tomatoes the lowest in "customer satisfaction" of 31 items.)

It was not until the early 1960s that such a cultivar was born. The blessed event occurred in the laboratories of the Institute of Food and Agricultural Science—in Florida, naturally, since the state is the nation's largest producer of fresh-market tomatoes. At about the same time, a cultivar for tomatoes grown for processing was developed at the University of California, Davis—appropriately enough since California is the number one processed-tomato state. From that time forward, with help from both these cultivars, millions of tons of flavorless fruit (of the vine) have been forced down the nation's collective gullet.

Even Julia Child is unlikely to know

That Americans should have swallowed this whole, as it were, is easier to understand than it at first seems. Our consumption includes not only fresh tomatoes in salads but cooked tomatoes from cans—tomatoes for every occasion. Even Julia Child is unlikely to know what is arriving at her taste buds when the product has been mixed with a variety of ingredients—some nature's, some man-made—pureed beyond recognition and stored in a bottle labeled "ketchup" or "catsup." Or swirled in the spices of a Bloody Mary, the notion of mixing gin (or vodka) and tomato juice being absurd on the face of it (but very tasty).

There is almost no way in which a tomato can *not* be prepared. Talk about a groaning board: *The Joy of Cooking*—your grandmother's favorite cookbook—lists 64 tomato recipes, and this is but an hors d'oeuvre when compared with the recipes in *The Tomato*

For years researchers have been at work trying to create square tomatoes—perfect for sandwich making.

The Tomato Genetics Stock Center at the University of California, Davis, has more than 2,750 varieties.

Book—all 136 pages of them. In some parts of the country, people still eat fresh tomatoes with sugar on them. The tomato can be stuffed, baked, boiled, broiled, stewed, pureed, deviled, glazed, pickled, grilled or fried. It is the titillating ingredient in many soups, sauces, relishes, antipasti, salads, aspics, marmalades, butters, omelets, dressings, drinks and, yes, desserts. Have you tried a farmhouse bread-slice pudding with candied green tomatoes lately?

It's not certain where this Jack-of-all-vegetables originated, but most olericulturists—that is, horticulturalists specializing in vegetables—agree that tomatoes first grew as wild, cherry-size berries in the South American Andes and that the fruit as we know it today was developed in Mexico, where it was known by the Nahua name *tomatl*. From there it traveled to Europe by boat with the returning conquistadores. Writing in 1554, the herbalist Pier Andrea Mattioli stated without fear of contradiction that "the tomato is eaten in Italy with oil, salt and pepper."

Given the Italian love of tomatoes and tomato sauces in pizzas and pastas, one might reasonably expect Italians to be the greatest consumers of *poma amoris*, or "love apples." But we're no pikers, either. Exact figures are hard to come by, but each red-blooded (what else?) American man, woman and child wolfs down something like 80 pounds every year of *Lycopersicon esculentum* (which translates as "edible wolf peach"). Sound like a lot? But consider the mountains of tomato-laced pizzas and ketchup-drowned hamburgers consumed by American kids each hour of every day and every night.

What seems difficult to understand is why, when the tomato was being eaten in Italy and much of the rest of the Mediterranean world by the mid-18th century, it had such a hard time getting a foothold here in Colonial America. The ostensible reason was that, long after Europeans had exploded the myth, tomatoes were still regarded as poison on this side of the Atlantic because they belong to the deadly nightshade family, which includes belladonna and mandrake, both fairly toxic.

There is no record that tomatoes were even grown over here until after the Declaration of Independence, when a respected Virginia farmer named Thomas Jefferson described planting them in his garden at Monticello. So enduring was the Colonists' fear of the succulent esculent, however, that the first cookbook in the United States, *The New Art of Cookery*, printed in Philadelphia in 1798, makes no mention of the tomato, although it exhaustively lists 31 different categories of recipes from "soup" to "sousing."

Yankee sailors who had visited Italy and Portugal knew that "love apples" were good eating and did not give you the collywobbles, and gradually word got around, occasionally as a result of some dramatic act of proselytizing. History records that to disprove the poison theory, a brave fellow named Robert Gibbon

Thomas Wolf, a Peabody Award-winning television producer and writer, has addressed such diverse subjects as neckties and D-Day for SMITHSONIAN.

The Campbell Soup people help pay for university research—appropriately, considering the company has used tomatoes since 1869 when Abram Anderson and Joseph Campbell began stuffing them into cans.

Johnson stood on the courthouse steps in Salem, New Jersey, in August 1820 and ate a tomato—with no adverse effects. His effort seems to have done the tomato's reputation some good. At any rate, in the 1840s a farmer's magazine noted that there are "few who relish the tomato at first taste," while a cookbook of the same era advised that a tomato would "lose its raw taste" if boiled for three hours. By the late 1890s, however, *The Book of Good Dinners for My Friend*, the first of Fannie Farmer's famous line, was offering recipes for tomato soup, salad and sauce, and the tomato itself broiled, fried, sautéed or stuffed.

Given its history, it is somewhat ironic that today, according to some expert calculations, among all vegetables except for potatoes, tomatoes contribute the greatest amount of nutrients to the American diet. This is largely because they are so voraciously eaten by so many people and in so many forms. Although they rank below broccoli, spinach, Brussels sprouts, lima beans and peas, to name a few, in concentration of ten of the most important vitamins and minerals, tomatoes make up through gross tonnage consumed what they lack individually.

What other tomato vignettes to set before you? Consider the following.

• Nurserymen use tomato seedlings the way miners once used canaries. The seedling cannot survive the smallest amounts of natural gas, and so nurserymen include them in their greenhouses to warn of leaking gas heaters.

• Superstition once had it that placing a ripe tomato on the mantel when first entering a new dwelling would guarantee future prosperity. But since ripe tomatoes were not available for months at a time during earlier periods, pincushions—shaped and colored like ripe tomatoes—were called on to pinch-hit (which is why your grandmother's pincushion is likely to have a red center).

• The tomato has some medicinal uses, too. Tomatine, its principal alkaloid, which is concentrated in its branchy leaves and green fruit, heals certain fungous diseases of the skin.

• Tomatoes stop turning red when warm weather starts to sauté them. That's because the final step in the creation of the red pigment is inhibited when the temperature gets above 85 degrees.

• If you smoke cigarettes or cigars, stay out of the garden. Tobacco mosaic virus on your fingers will stunt and yellow the tomato plants.

• Unless they are fully ripe, never store tomatoes at below 50 degrees F. The cold will prevent their ripening. Once ripened, they can be briefly refrigerated without any adverse effects. (Writing in the *New Yorker* a dozen or so years ago, Thomas Whiteside noted that the average supermarket storage refrigerator is kept at 38 degrees.)

And what of the care and feeding of *Lycopersicon esculentum?* More than 25 million Americans perform those rites every year in their own backyards. For them only a few grains are needed from the bushels of

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For ages, people eschewed tomatoes because they belong to the same family as deadly nightshade.

instructions sown each spring on the garden pages of the country's newspapers and magazines: 1) Plant where they'll get full sun. 2) Give each plant one or two inches of water every week. After all, the tomato ends up 90 percent water. 3) Let it ripen fully on the vine. The longer it's on the vine, the better it'll taste. Flavor in a tomato is controlled by the balance between its sugar and its acid content. 4) Fertilize early and then hold off until the fruit has set; excessive nitrogen tends to keep the fruit from setting. After it has set, fertilizers are OK.

And speaking of fertilizers, consider the ingenuity of one Mike Klingaman, whose gardening column appears in the Baltimore *Evening Sun*. A few years back he decided to research the effect on the tomato of a rather limited group of fertilizers. A former sports writer, Klingaman arranged to get manure samples from the horses that finished on top in the 1986 Preakness Stakes. He lined up his tomato seedlings according to their post positions behind stakes marked with the winners' names—Snow Chief, Ferdinand and Broad Brush. Then he fertilized the rows accordingly. And the winner was? A local nag named Dexter, who had never been seen at a track.

But that was yesterday. What of tomorrow? Will new tomato creations, like Macbeth's bloody hand, soon our multitudinous supermarkets incarnadine? What's next? Tomato chips? Tomato hot dogs? Both have been launched as trial balloons and have fallen as flat as a beginner's soufflé. Experts believe it unlikely that we will soon see another tomato-sauce explosion like the one served up by the arrival of the pizza, without which it is impossible to run a U.S. college these days. But it's hard to predict what the future may hold for the tomato because Americans, at least, seem to value looks above taste. A few years ago a group of California consumers was asked to sample a number of tomatoes, some of them beautiful to behold but not so tasty, others mouth-watering good but inferior in aspect. Several days later, when the two groups of tomatoes were offered to market buyers, most consumers chose the ones that looked good.

Changing its genes for the better

Whatever happens tomorrow, it is likely to result not only from conventional plant breeding but from genetic research being carried out now in the laboratories of universities, departments of agriculture, seed companies and pesticide manufacturers across the country. Untold millions of dollars are being spent as plant biologists try to find ways to shoot desired genes into the tomato's cell nucleus. The Monsanto Company, for example, has experimented with a gene from petunias to enable the tomato to detoxify a weed-

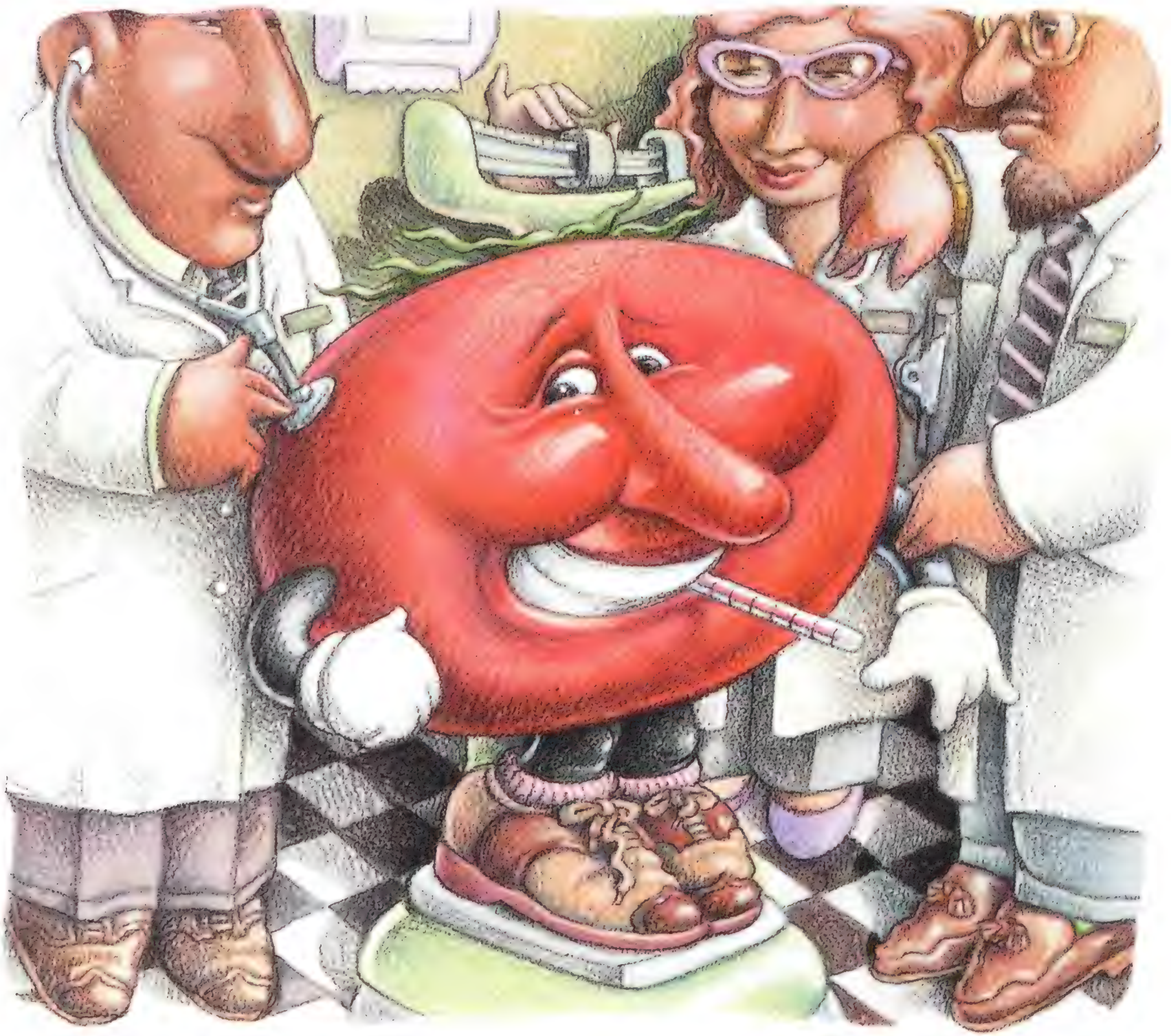
killing pesticide—a pesticide, as it happens, that Monsanto itself manufactures. To the environmentalists' delight, it is now experimenting with genes that resist the pests, rather than the pesticides.

Genetic research tends to cloud the seer's crystal ball because many researchers hide their light under a bushel (or bushel basket) until they can patent the idea and reap the financial reward. In 1989 a patent was issued to Calgene Incorporated, a biogenetics company in Davis, California, for genetic engineering that may slow down the softening process in tomatoes, so they can be allowed to ripen on the vine and still be shipped cross-country without becoming overripe and mushy. This work is being supported in part by the Campbell Soup Company, which is perhaps as it should be, considering how much mileage the company has got out of the tomato during the years since Abram Anderson and Joseph Campbell first began stuffing one large beefsteak tomato into one not-so-itty-bitty can. Field tests on the Calgene cultivar are under way at this very moment.

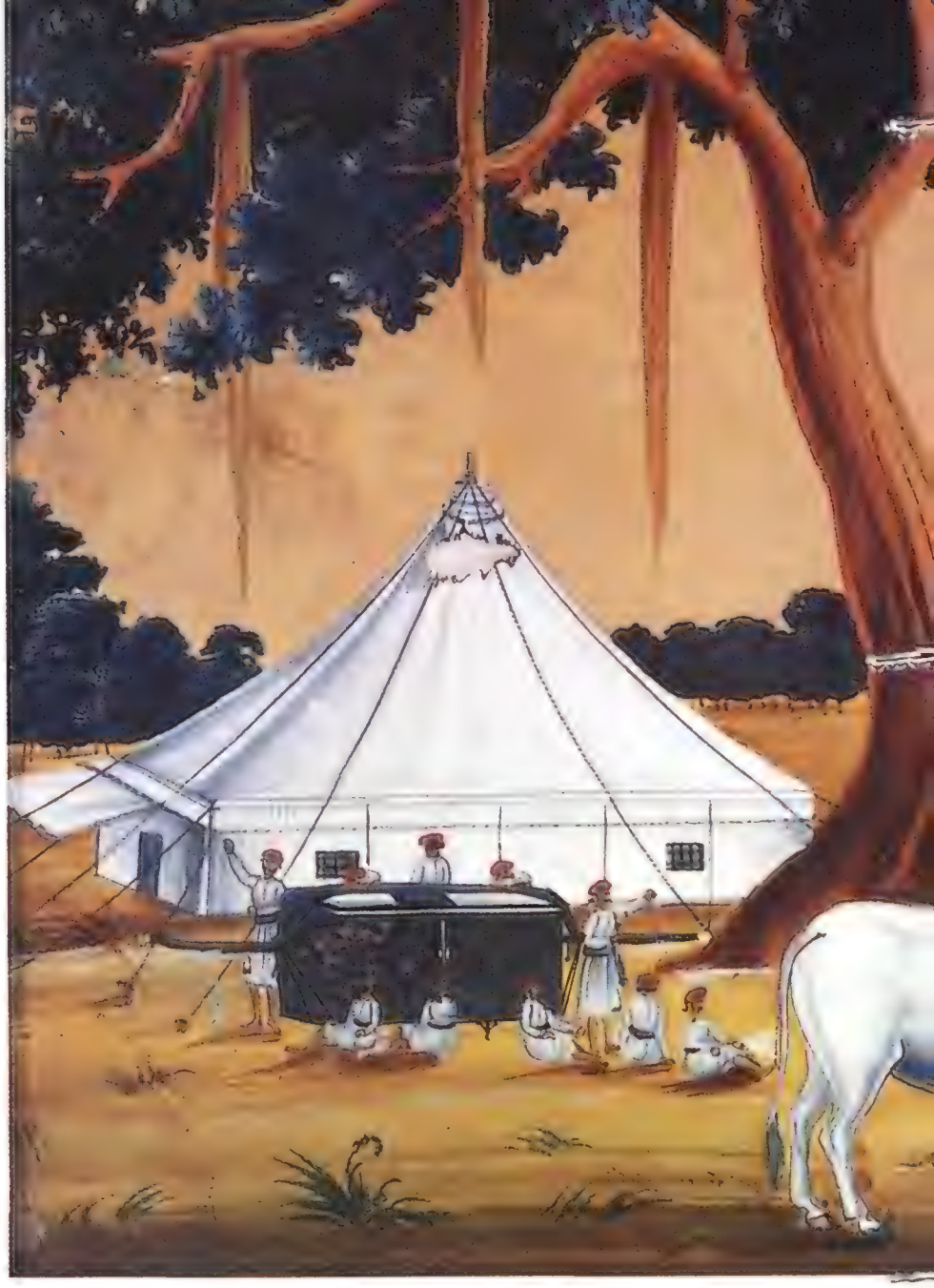
In the future, says Timothy J. Ng, associate professor of plant genetics and breeding at the University of Maryland, if genetic insertion becomes a reality, there may be hardly any limits on what can be done. He and his colleagues are studying how genes can control and even prevent the ripening process. This raises the possibility that one day there will be tomatoes designed to ripen at discrete intervals selected by you in advance.

In that case, who knows? The day may dawn when the fresh *Lycopersicon esculentum* on your supermarket's shelf will be so indescribably delicious the year round that no one will bother to grow the common, or garden, variety ever again.

Plant biologists are trying to create a tough (though tender) tomato that can fight off pests by itself.



Jane Ward and husband (opposite) had going-away portraits painted—in case they died doing God's work.



Scenes from India commissioned by Ferdinand Ward include the first trek from Madras to Madurai.

By Geoffrey C. Ward

Two missionaries' ordeal by faith in a distant clime

For Ferdinand Ward and his wife, Jane, trying to bring Protestantism to India proved an agonizing passage of the soul

On the morning of April 21, 1837, the American merchant ship *Saracen* stood off Madras, on India's southeastern coast, at the end of a 120-day voyage from Boston. On deck, seven American missionaries and their wives watched silently as two catamarans struggled out toward them through the surf. The Americans had left their friends and families and endured 15,000 miles at sea in order to bring New England Protestantism to the unconverted millions of India, and they were both excited and apprehensive at what they might find ashore.

Despite the fierce Indian sun that beat down upon them, the men were all dressed in black; their wives wore the long-sleeved dresses with full skirts and many petticoats then thought suitable at home for the wives of clergymen; and when the first catamaran reached the *Saracen*, and its three occupants clambered up the side to deliver the harbormaster's anchoring instructions, the sight of them, shiny with sweat, naked but for narrow loincloths and standing only a few feet away, drove several of the women and one or two of the men to their cabins to weep with shock and pray for strength.

Ward rode in covered cart drawn by team of bullocks; servants carried Jane aloft in a black palanquin.

All paintings from the collection of John Brinton

The Reverend Mr. Ward at 25, painted by Alfred Sully, hoped for "Divine Strength to preach to the heathen."

"These are the Hindoos," the Rev. Ferdinand De Wilton Ward remembered saying to his wife, Jane, in wonderment that morning, "these are the people among whom we came to dwell!" Clearly, the gulf between New England and the ancient land to which they and their companions expected to devote the rest of their lives was wider than they'd dared imagine, the task of conversion more daunting than they'd dreamed. Ferdinand Ward, from Rochester, New York, was 25 years old in 1837, newly married, the pious son of pious parents. He had determined while still at Princeton Theological Seminary that he was destined for the mission field in India. Missionaries were revered as modern-day saints, then; they were lauded in sermons and in Sunday schools, and cheered when they returned home to raise funds and tell of their experiences among the heathen.

Ferdinand's father had opposed his going, sure that he could do just as much good from a more comfortable pulpit closer to home, fearful that his son's health—he was extremely nearsighted, given to migraines, easily agitated when things did not go his way—was too fragile to withstand such a brutal climate. But Ferdinand was resolute: "My heart is fixed—duty appears too plain to admit of hesitation," he wrote in his letter of application to the American Board of Commissioners for Foreign Missions. "Parental affection will present many difficulties. I anticipate them all. But with dependence on Divine Strength I hope to meet them all and soon preach Christ to the heathen."

The ranks of Protestant missionaries Ferdinand sought to join had actually begun forming in 1792 in England, where a sermon by William Carey, a shoemaker turned Baptist minister, inspired a generation of young clergymen to "expect great things from God" and, in return, "to attempt great things for God"—including the conversion of the entire non-Christian world. Carey himself led the way, establishing a Protestant mission in India at Calcutta two years later.

It took 18 years for American Protestants to match the zeal of their British counterparts, but once infused with it they set out to spread their message abroad with all the relentless optimism and drive with which America's secular blessings were soon

Photographs by Julian Nieman/ Susan Griggs Agency

Another of the scenes from Indian life done for Ward by several local artists shows a Western woman being carried around town.

to be spread from sea to shining sea.

The American Board was established by New England Congregationalists (soon to be joined by Presbyterians) in 1810. Historians still puzzle over just what accounted for the extraordinary enthusiasm for foreign missions that gripped New England and upstate New York in the early 19th century. But it is clear that the Puritan churches, their old-time supremacy and status undermined by the revivalist sects spreading along the frontier since the advent of John Wesley, and increasingly uneasy at the growth of Unitarianism closer to home, discovered in foreign missions a timely new cause around which to rally.

In any case, the widespread belief that the millennium was rapidly approaching—one prominent minister set 1999 as the most likely date for its arrival—suggested that there was no time to waste in turning the nations of the world to Christ. "We should not object to your all going [into mission work]," one of Ferdinand's Princeton professors told him and his fellow divinity students. "Let the home churches look after themselves. It will do them good." The Rev. Timothy Dwight, president of Yale, set the American Board's ambitious agenda. It was America's special mission, he said, to hasten the time "when the *Romish* cathedral, the mosque, and the pagoda, shall *not have one stone left upon another which shall not be thrown down. . . .*"

To achieve this goal in Europe and Asia, the board's secretary, Rufus Anderson, foresaw "a chain of [mission] posts, extending from Ceylon [where American missionaries began their work in 1815] through the Tamil nation of southern India, the Mahrattas, the Rajpoots, and Afghanistan, Persia, Armenia, and Asia Minor to Constantinople and into European Turkey." In the end, the board did send men and women to the Near East—and to the Sandwich Islands, China and Africa, as well—but no serious effort was ever made to link the northern and southern ends of Anderson's chain, and the rest of the field was left to men and women from other denominations: old-school Presbyterians, United Presbyterians, Baptists, Lutherans, Methodists—even Unitarians and Friends—all eventually staked claims to different parts of the Indian subcontinent, the minute doctrinal differences that divided them providing an endless source of puzzlement to those they hoped to convert.

Ferdinand's application was eventually approved, with one proviso. "The Board say I must marry," he told a classmate after graduation in June 1836, "and give to that object my entire time. I do not like it. I want time . . . for other things. You will hear if anything is affected."

Something was, and with remarkable speed. On September 16, Ferdinand Ward married Miss Jane Shaw of New York City, the strong-minded 24-year-old daughter of a shipping merchant, after a courtship of less than two months. Small, wiry and partially deaf in one ear, she was every bit as rigorously pious as was her husband. Asked to contribute something valuable to her church one Sunday morning, she is said to have placed in the collection plate a slip of paper on which she had written simply "Myself."

"The temptations of refined & worldly society," her pastor assured the board, "have not hindered her from being a devoted missionary among the poor, the ignorant and repulsive population on the outskirts of our city." And she burned to carry the Gospel overseas as well, her zeal kindled by the example of a missionary couple who had already sailed to Asia. "Oh fly, fly to the heathen," they had urged her as they left, and she had taken this as "in some measure a call from my Heavenly Father." But women were not yet routinely permitted to enter the foreign mission field unescorted; marriage to Ferdinand made it possible for her to answer the call they both had heard.

Before the newlyweds set out for South India, Ferdinand and another

Great-great-grandson of the Wards, and author of a prizewinning FDR biography, Geoffrey Ward is presently working on two books about India.

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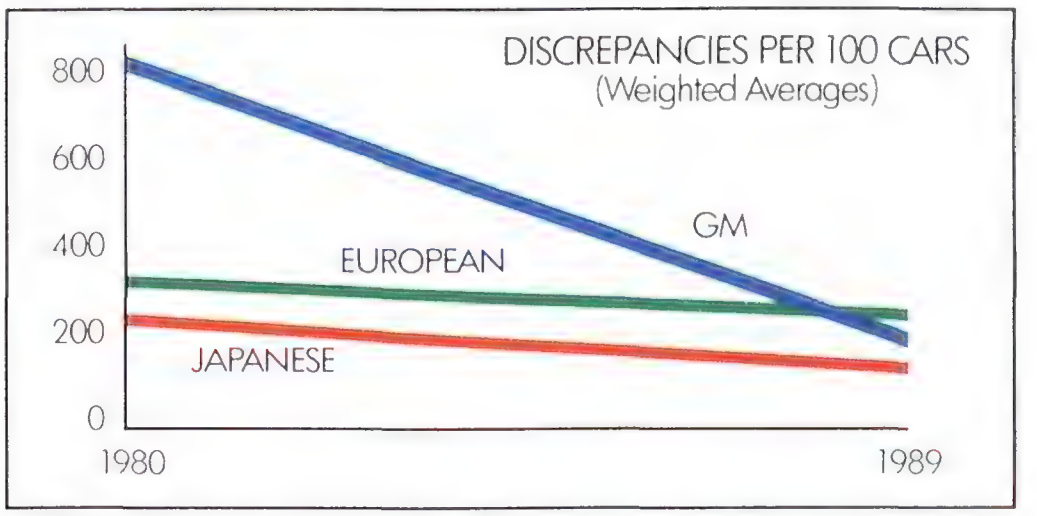

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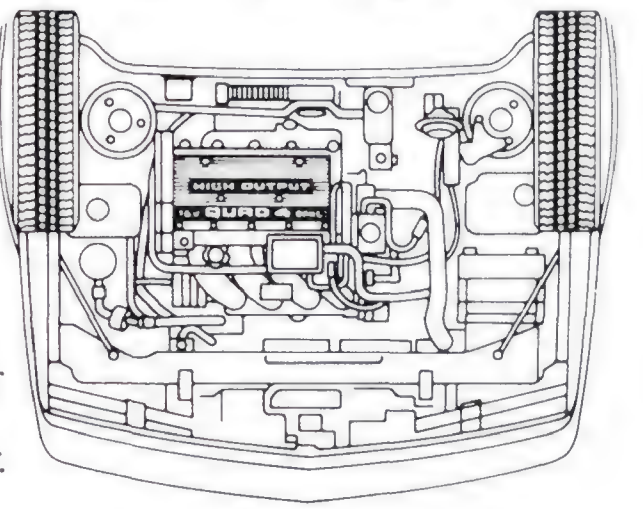

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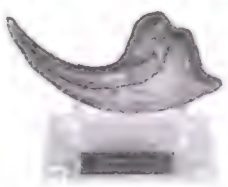

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would-be missionary, the Rev. Henry Cherry, were publicly ordained in the First Presbyterian Church at Rochester. The enterprise upon which they were about to embark, said the Rev. Joseph Penney, promised "the *certainty of success.* The Spirit of God is with his servants, light is dawning in every quarter of the world. . . . Prejudice is flying before the light of Truth."

A hymn especially composed and performed for the occasion echoed in the Wards' ears as they left the church, surrounded by tearful well-wishers:

Trusting in Christ, go, heralds, rear
The Gospel standard, void of fear;
Go, seek with joy your destined home,
And preach a Saviour there unknown.

Yes, Christian heroes, go—proclaim
Salvation in Immanuel's name
To distant climes the tidings bear,
And plant the Rose of Sharon there.

Their admirers' tears were understandable. It was presumed that missionaries would live out their lives abroad, discouraged from coming home even if fatally ill: "It is better that our missionaries should die on the field of battle," the board warned, "than to return to camp in a wounded or disabled state." India was at least four months away, haunted by mysterious fevers, unimaginably strange; both Ferdinand and Jane had already sat for their portraits so that if they died abroad their friends and families might remember what the young couple had looked like.

Just before the *Saracen* left Boston, Ferdinand sent a farewell letter to his parents, begging them to write often: "I love you notwithstanding the apparent contradiction of my conduct. Will you pray for me? I have taken a serious step. I need grace, constant grace. We may not meet again on earth. God grant we may above."

The Wards spent five and a half months in Madras, struggling with the Tamil language and trying to accustom themselves to India's sights and sounds and smells, then set out for Madurai, the Hindu bastion that was to be their home. The journey took 20 days. Ferdinand rode in an oxcart, Jane in a palanquin carried on the shoulders of a team of four men who chanted in Tamil as they hurried on:

She's not heavy, *Putterum, Putterum*
Carry her softly, *Putterum, Putterum*
Nice little lady, *Putterum, Putterum,*
Carry her gently. . . .

The countryside was green and beautiful (despite the heat, which forced the party to rise at 4 each morning to avoid being on the road in the middle of the day): thick forests interspersed with ricefields and groves of coconut palms; distant blue hills

Missionary compound at Madurai in 1839, two years after Wards arrived, included living quarters, schoolhouse. It is still a Protestant headquarters.

reminiscent, Ferdinand noted, of "our Fatherland"; twisting rivers that had to be traversed in circular boats woven of wicker, 30 feet across.

But the Wards' religious convictions would not permit them to enjoy any of it wholeheartedly, for signs of the alien faith they had sworn to eradicate were everywhere: "If we are delighted with the appearance of a fresh and shady grove," Ferdinand noted in his diary, "our spirits sink at the sight of the images its branches hide." Even the friendly villagers who came out to watch them pass—"the poor, degraded, yet immortal beings around me," Ferdinand called them—inspired in him only a maddening sense of helplessness: he was still too inarticulate in Tamil to keep them from the doom from which, he was sure, his Gospel message would otherwise have freed their souls.

On October 9, 1837, the Wards at last came within sight of the two giant carved *gopuras* of the Minakshi temple at Madurai. Some 40,000 people lived in the temple's shadow, most of them devotees of Shiva and his local consort, Minakshi. A stream of exultant pilgrims escorted them toward the city walls; their joyful shouting of the names of their gods struck Ferdinand and Jane as demonic.

Just before they reached the walled city's eastern gate, the Wards turned into the dusty mission compound where they were greeted by the Rev. William Todd, who had established the American mission three years earlier with the help of just two other missionaries and three Tamil-speaking Ceylonese. He had not had an easy time. Madurai was "inexpressibly filthy," Todd had reported to the board back home. A tangle of narrow, squalid streets filled with refuse and permeated by the stench of sewage and stagnant water, the city was ravaged annually by cholera. Madurai had once been the capital of the Pandyan kings, in whose tumbledown palace a mob had threatened to kill Todd if he did not stop maligning their gods, but it was now almost exclusively a place of Hindu pilgrimage, "a stronghold of religious debauchery," Todd told the board. "An influencial and numerous priesthood dwell here. . . . Tumultuous processions, wild and fantastic as the dreams of a maniac . . . pervade the city night and day, making the idolaters drunk with the excess of glare, noise and folly . . . all in barbarous taste."

Todd's first wife had died within weeks of her arrival. He then married a widow (who had herself already buried two missionary husbands), only to watch her die, as well. His own health deteriorated dangerously and his Ceylonese helpers languished from homesickness. Despite it all, and with just a handful of reinforcements, he had managed to organize a small con-

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Diane Raines Ward

Rich profusion of carved stone deities distressed Ward and other missionaries.

gregation, start 35 primary schools for boys and one for girls, establish a secondary school in which students were taught in English, draw up plans for a seminary, dispatch missionaries to start two new outposts in the countryside and, shortly before the Wards' arrival, make his first genuine convert, a servant in his own household.

Todd had asked the board for 27 additional missionaries to carry on the work. He got just 7, and the load each was expected to shoulder was daunting. Ferdinand found himself leading church services; overseeing nine schools and acting as principal of another; delivering discourses in his new and unsteady Tamil to city crowds; and riding out into the countryside for weeks at a stretch, inspecting outstations and scouting likely sites for new ones, preaching, and distributing the tracts and miniature Bibles with which he stuffed his pockets every morning. He also found time to oversee construction of a schoolhouse and the city's first preaching bungalow—soon to be supplanted by the Eastgate Church, a New England-style meetinghouse in whose belfry hung a bell shipped all the way from Boston in the hope that it would deny "the natives [who] have no timepieces" any excuse to miss services.

Although things became tense from time to time in Madurai—most notably after one of the Wards' more impetuous colleagues smashed two village deities with his cane while out for a stroll one morning—the missionaries were rarely in serious danger from Muslims or Hindus. Among the roughly 1,800 American and English Protestant missionaries who worked in India between 1800 and 1876, in fact, only 20 were actually killed by the people they struggled to convert, and 18 of those died in the Indian Mutiny of 1857, butchered more because of their white faces than because of their faith. (Of the remaining two, one was murdered by a lunatic at a village fair in 1863, and the other died at the hands of his own overzealous nightwatchman who, dimly seeing his master padding through the garden in his nightshirt, shot him for a prowler at Peshawar in 1864.)

Roman Catholics, whom Ferdinand and his fellow Protestants believed at best deluded, were another matter. "Protestants," Ferdinand asserted

Diane Raines Ward

The Minakshi Temple in Madurai symbolized "all that is repellent."

proudly in a small book, *The Elements of Geography for Little Children*, "are the only *true* Christians." And Catholics returned his scorn: when he preached in a largely Catholic neighborhood—Catholic missionaries had been at work in Madurai since 1605—crowds tore up his tracts, gathered outside the bungalow in which he preached to jeer and throw stones, lit noxious compounds of "sulphur, pepper and deleterious drugs" outside the windows to smoke out his listeners and, when none of that seemed to work, set the structure itself ablaze. Ferdinand had it rebuilt and resumed preaching.

Nature harassed the missionaries, too. They had always to be on guard against snakes and scorpions. Ferdinand remembered killing a great spider that had made its home overnight in his shoe; its body "was nearly the size of the palm of my hand," he wrote, ". . . olive brown, and covered with a soft down." Bookshelves stood away from walls to discourage white ants; the armies of black ants that filed across the floor of bamboo matting were kept from climbing upward by resting the legs of all the chairs and tables, bureaus and beds, in brass cups filled with water.

Clouds of moths and winged ants whirled around the hissing lamps in the evening, and after dark the mosquitoes swarmed. Bats fed on them, squealing in and out of the windows, and sometimes entangling themselves in the netting that shrouded the beds. The fat, pale geckos that clung to the ceiling, waiting for prey, sometimes missed their kill and fell, hitting the floor with a smack loud enough to wake a fitful sleeper.

And there was the weather—dust storms, two torrential monsoons every year, heat that reached 130 degrees F in the sun and remained there for weeks. "Between the rising and setting of the sun," Ferdinand wrote, "a foreigner should not leave his house without the shelter of a carriage or a palanquin or a thick umbrella."

Diane Raines Ward

Ward met congregation at this church after he was transferred to Madras.

While Ferdinand went about beneath his umbrella, Jane huddled inside the mission bungalow, its doors and windows blinded by thick mats of woven grass, her only companions the servants who wet down the mats with buckets of water, and the boy who dozed outside with a rope tied to his big toe that pulled the creaking *punkah* back and forth to stir the air. It was a lonely life—at least one missionary wife at Madurai suffered a nervous breakdown and had to be shipped home with her husband—and it was not what Jane had bargained for when she agreed to marry. "I expected to go among the people and talk Truth with them—Argue—exhort, entreat and postulate . . . ," Ferdinand quoted her as having complained. "But how *disappointed* [I am]. I can't speak. The language is against me. I can't get out. The *heat* and children *forbid*. I have lost my strength and my nerves are unstrung, my constitution shattered. I am worthless."

"The first duty of a missionary's wife is to have a *smiling face*," one old hand said. "A female belongs to her compound. That is her peculiar

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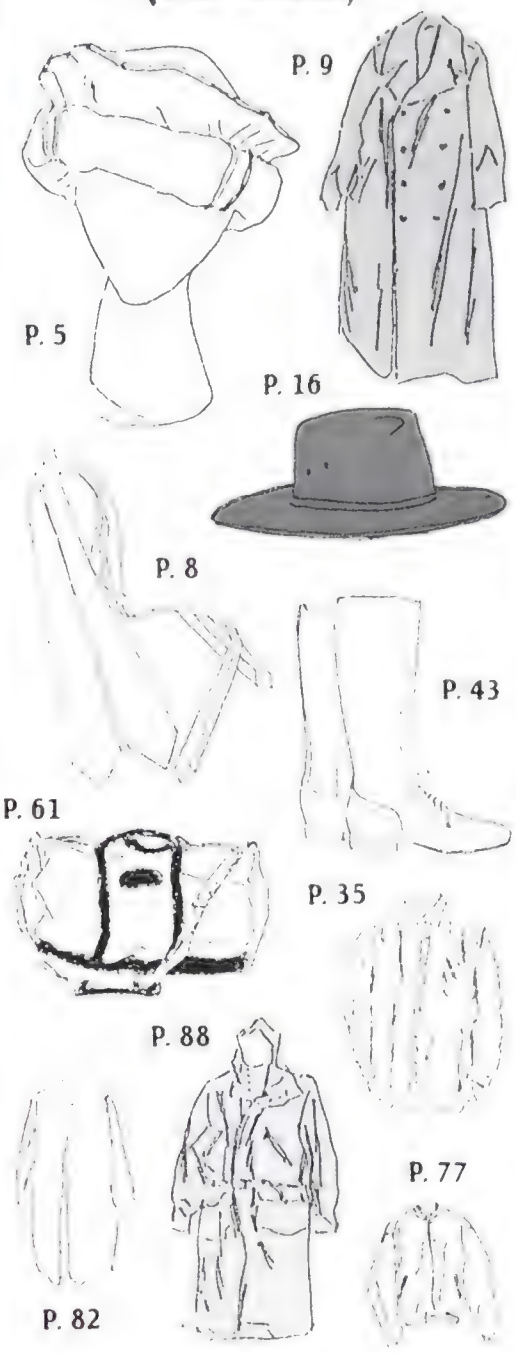

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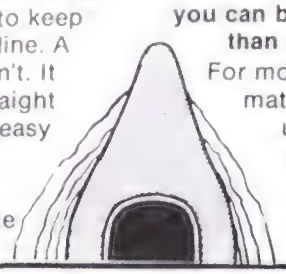

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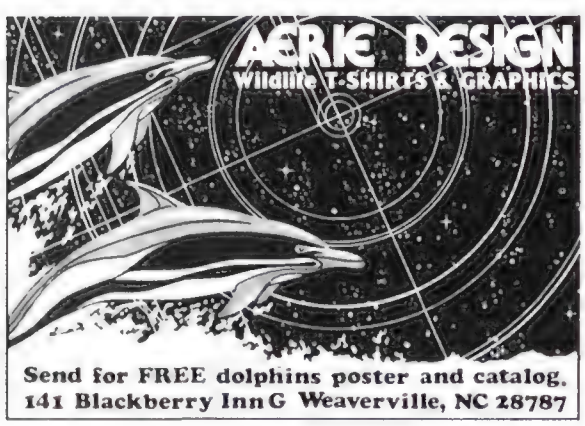
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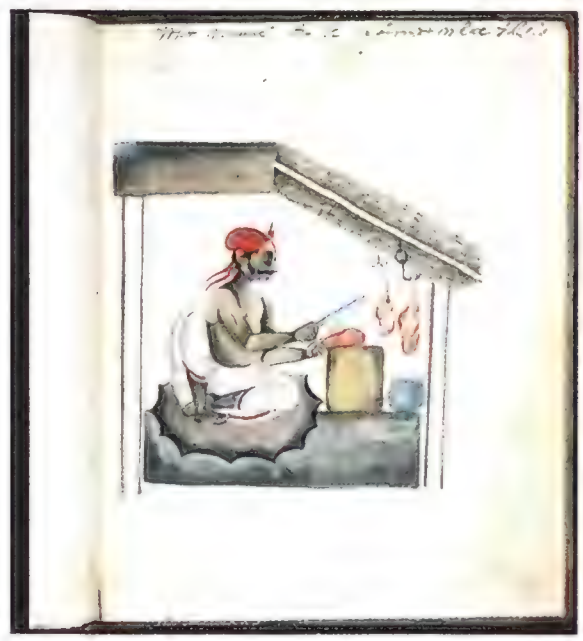
sphere." Jane did her best to fulfill her first duty; even before her first child, Sarah, was born in 1838, she joined the ladies of the "maternal association," who met once a month to discuss the articles on childraising and housekeeping they had read in the latest issue of *Mother's Magazine* sent out from Boston.

The threat of fever was constant: four mission wives had already died before the Wards reached Madurai (fueling the rumor in the city that Minakshi had decreed that no white woman could live for long within sight of her temple); in a single subsequent month, two missionaries, three wives and six of their children fell victim to cholera, which was then taking 60 lives a day in the city. No one ever knew who would be next.

Shortly after Sarah's birth, Ferdinand rode off on still another itinerating tour. "Oh, my beloved Husband," Jane wrote him then, "how chequered with joy and *sorrow* is this life of ours! Another & another & another is hurried to eternity. . . . Brother and Sister Tracy called [to Ceylon] to bury their beloved infant—by the side of all who have died from our company since we left America. . . . Oh what feelings of horror & trembling come over my whole frame. *You* cannot know a *Mother's* feelings.



Everyday scenes offer a series of tradesmen, including this butcher.

Pounding and cleaning rice was "a constant employment among females."

Oh, if God should see fit to call our little Sarah, I think my heart would break. . . . I feel your absence very much. May the Lord help you my dear Husband & give you back to us in His own good time."

Sarah would be spared, but a second child, named Levi for Ferdinand's father, was taken at 11 months in 1841. A third child, William, would also survive, but a fourth, a girl, died within a few days of her birth in 1844.

Despite the toll the climate and these losses took on her health and resilience, Jane Ward remained determined to do at least some of the Lord's work, which had driven her into marriage in the first place. If she could not go out on her own to seek for souls to save, as her husband could, she would have them come to her. She organized a school for girls and young women that met on the veranda of her home each morning to learn reading, writing and arithmetic in English and Tamil, along with Christian scripture, needlework and the natural history of birds.

All these trials might have been tolerable if the Wards' efforts to convert the heathen had been crowned with the success they had been promised. "Madurai is ready to receive the Truth," Ferdinand wrote confidently not long

after he arrived, "and so is *India*." But for the most part, those whom he and Jane had come so far to save proved unready and uninterested in their message. Members of the small Muslim minority, according to Ferdinand, were "in manner cold and repulsive . . . [and in] Religion most bigotedly attached to [their] own modes of faith and worship," which were "alike unique, grotesque, ludicrous, senseless and pitiable."

But the Hindu majority was worse. Their deities were at fault: "View the gods of India," Ferdinand wrote, "false to their word, thievish, licentious, ambitious, murderous, all indeed that is repellent, malignant and vile. . . . is it surprising that there is perjury, and injustice, and wickedness the land over? The Bible must supplant the narratives of their false divinities, their temples carved now with sculptures and paintings which crimson the face of modesty. . . ."

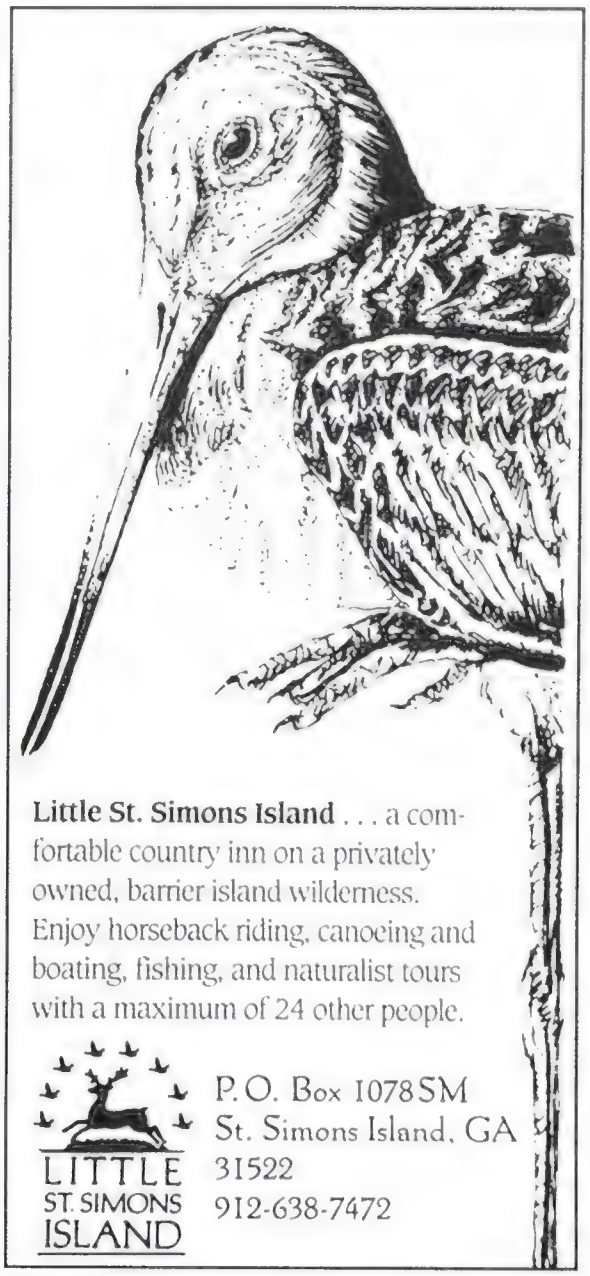
It was part of Ferdinand's task to help compile the statistics that were sent home annually to assure the board of the steady progress of that supplanting. When the Wards reached Madurai in 1837, there were some 1,200 children attending mission schools; by 1840, their numbers had more than doubled, to 3,316. But these meticulous tallies were misleading, for few who attended the schools or listened to the sermons did so out of genuine religious conviction. Low-caste parents sent their children to study at the mission schools because there were no other schools for them. High-caste Hindus were willing to have their sons attend the secondary school because the English they mastered there would help secure them a good job.

Wandering street performer with a trained monkey was familiar sight.

Many of those who professed to have become Protestants were untouchables, who did so from what one dispirited missionary admitted were motives "of a worldly nature." Already excluded from Hinduism, they saw little to lose, and at least the possibility of much to gain from the white man's religion.

Meanwhile, the pilgrims who filled the streets of Minakshi's city saw no reason to adopt a foreign faith and relinquish the status their caste standing provided them, though their priests did enjoy debating doctrine with the black-clad foreign holy men, whom they called "swami" out of respect and courtesy. Even Ferdinand confessed that he did not often come off best in these encounters. "Many a person who can fill a pulpit in America or England with respectability and credit," he wrote, "would undoubtedly break down if called to make an

Ward found this smith beating gold, and his busy aide, "very correct."



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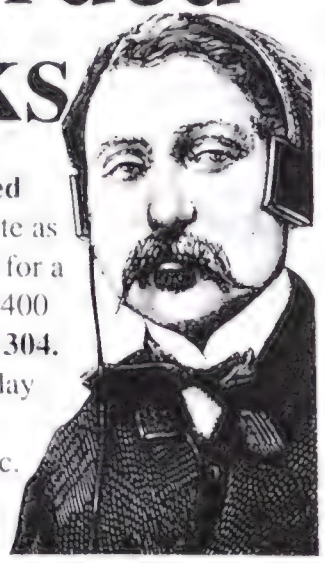

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attempt among the Hindoos; and this not for want of mental strength or furniture, but from the peculiar manner in which objections are presented, and the confidence with which they are uttered."

"What do you think is the reason we leave our native country, come to your villages and expend so much in the education of your children?" Ferdinand quoted a fellow missionary as having asked a group of priests.

"You expect by this good deed more certainly to reach Heaven," replied one.

"Oh, it is your nature," another answered, "just as it is the nature of the jackal to prowl abroad at night."

Hints of disillusionment began to appear more and more frequently in Ferdinand's letters home. In 1841 he was a helpless witness to the annual festival in which thousands of devotees hauled Minakshi and her consort through the streets on carved-and-painted carts:

"I went out between daylight and sunrise to see if, among the crowd passing like a flood from the North Gate to the river, I could discern the faces of any of the members of the English School—or others in our service—I met but one lad. I asked him where he was going. 'To worship my god,' was his reply. I detained him long enough to tell him what I thought of his god & what the true God thought of his conduct. Again he was in the mighty current borne on to evil & death. I will not say that others of my pupils were not there—I suppose they were—for I had learned that some of them had made vows to dance before [their deity]—but their painted faces & eccentric dress forbade my recognizing them. It was painful—a heartrending spectacle. I will not attempt to estimate the number thus crowding on to this idolatrous worship. It was like a mighty river filling the whole of a wide street, & continuing for many hours. 'How long, Oh Lord, how long?' was the exclamation of my heart and I turned away to return home."

"How I long at times for a little quiet and a breath of fresh air," Ferdinand wrote from Madurai in 1842, "a Sabbath of rest, a week of social intercourse—a sight of civilized dwellings—But No!. . . . Mud houses—people with *children* quite naked—shameless habits—heat dust—noise—idols—desecrated Sabbaths—fawning for favors—deceit—all, all are constantly in view. . . . to live among Hindoos is a *trial*, a *task*."

"A man obtaining money by self torments. Seen not infrequently . . ."

Irrigation pump using a counterweight was powered by three farm laborers.

To live among his fellow missionaries turned out to be a still more severe trial and task. Perhaps it was inevitable that the Madurai missionaries should have fallen out among themselves. They were hopelessly outnumbered, awed by the insurmountable odds they faced and terribly underpaid—Ferdinand estimated that two-thirds of his fellow workers were seriously in debt, with no prospect of ever digging out again. The mission was chronically strapped, too, and it took four months for the simplest request for more money to reach the board in Boston, and another four to receive a reply.

News from home was also infrequent: "I have been blessed with a girl and afflicted in the loss of a son since hearing from Rochester," Ferdinand complained in 1842, "from which you will see that I do not hear very often. My last information from my beloved parents is more than a year old."

The missionaries evidently found a fierce sort of satisfaction in pronouncing judgment upon one another. There were quarrels over how they were to govern themselves, over the allotment of what few funds were available, over matters of doctrine, over personal slights, real and imagined.

And, as petty differences intensified in the relentless heat, the Wards came in for more than their share of criticism. Some of the ladies may have found unseemly Jane's determination to make her own mark in the world. It was all very well for a wife to want to play an active role beyond her compound, one fellow missionary said, but it was wrong if, while "teaching a class of heathen children her own [were] untaught"; she must not travel "from house to house while ignoring her own."

Their husbands objected to the eagerness with which Ferdinand undertook prolonged inspection tours, leaving to others the daily monotony of seeing to the schools, and were scornful of the too-obvious pleasure he took in writing accounts of his own itinerating for the *Missionary Herald* back home. Others questioned the seriousness of the ailments that repeatedly sent him and Jane to the hills or seaside to recuperate. The Wards did not help matters by the icy hauteur with which, for weeks at a time, they refused even to speak to anyone who dared criticize them.

Ill again in the winter of 1842, and with a newly pregnant wife still weak from fevers that had not left her since the death of their son months before, Ferdinand asked permission to take further leave. His enemies saw their chance, arranging instead to have the Wards permanently transferred to the Madras mission. Publicly, Ferdinand maintained that "[t]he health and highest usefulness of myself and my family [had] required" the move; privately, he knew he had been driven out. One relieved member of the Madurai mission wrote a colleague that it was sure to be stronger, not weaker, for the couple's absence.

Ferdinand wanted to go home. "The thought of spending my life in this country (unless a great change . . . occurs)," he now confessed to his father, "is *intolerable*." To persuade his colleagues that he was not malingering, he submitted to their quarterly meeting an exhaustive catalog of his ailments, signed by a surgeon: malarial

Ward notes this cart carried him to preach to "many thousand Hindoos."

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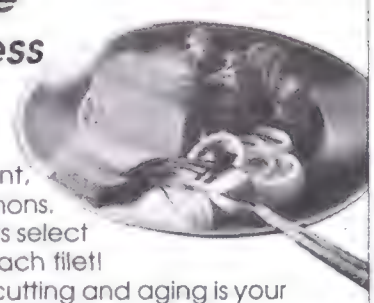

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After his return from India, Ward had a parish in Geneseo, New York.

fever; "hepatic derangement and other visceral disease"; "Bowel complaint which has greatly reduced physical strength" [already seriously undercut by] "great mental exertions in his missionary calling and deep study"; and "overtaxed nervous system inducing Dyspepsia and a tendency to Erysipelas [and] Inflammation of the Lower Extremities." Another hot season in India, the surgeon said, would certainly kill him.

Finally, in April 1846, nine years after he and Jane first landed in Madras, they and their two surviving children were allowed to sail for home. "*What good* has resulted from all this?" Ferdinand wrote from aboard ship, and sadly answered his own question: "But little that is as yet apparent. . . . Much apparent good *I do not see*. . . . It is labouring *in hope*."

Back home at last, Ferdinand accepted a Presbyterian pastorate at Geneseo, New York, and lived on there for four decades. But he never lost his interest in India: he traveled throughout the Eastern states and as far west as Chicago on behalf of the missions, persuaded friends to ship him spices so that Jane could make the fiery food he craved, and in 1850

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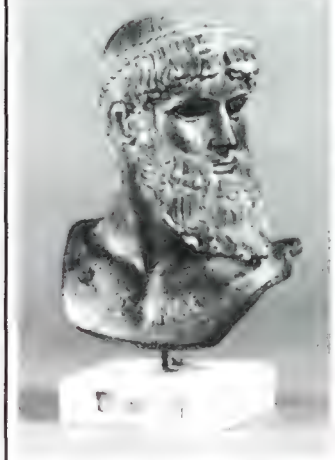

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published a well-received book, *India and the Hindoos: Being a Popular view of the Geography, History, Government, Manners, Customs, Literature and Religion of that Ancient People, With an Account of Christian Missions Among Them.* It is an odd volume, compulsively encyclopedic both in the number of topics it takes up—everything from fauna to funeral practices—and in the overconfident ignorance it displays about a good many of them. (The horn of the Indian rhinoceros, it explains helpfully, "projects, not infrequently, thirty inches upward. So long as the animal is quiet, this appendage lies loose between the nostrils; but when excited, the muscular tension is so great that it becomes immovably fixed, and can be darted into a tree to the depth of several inches.")

Jane Ward died in 1888. Ferdinand followed in 1891, having lived long enough to see the number of American missionaries abroad swell to nearly 4,000. Ten years later, the recording secretary of the American Board would remain bravely certain that the 19th century was destined to pass "into history with an imperishable name and glory. Hinduism, Buddhism, Confucianism, are but the shadows of their former strength, and seem on the point of extinction."

It is hard now not to be a little scornful of the Wards for ever believing that simply by preaching the Gospel outside the gates of Hindu temples they could bring down the faith that built them, a faith far older than their own. Thousands of pilgrims still crowd in and out of the Minakshi temple each day; the dark, pillared halls that so alarmed the Americans are now lit by electric bulbs, but the eyes of the worshipers making offerings at its busy altars remain filled with the same reverence for the gods the first missionaries failed utterly to expunge.

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David Clark–*Audio* Magazine 9/89

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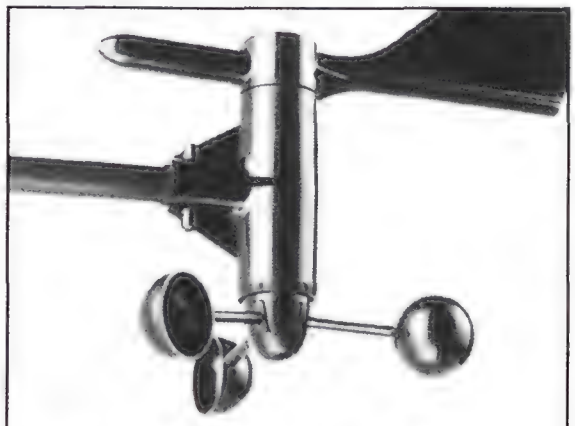

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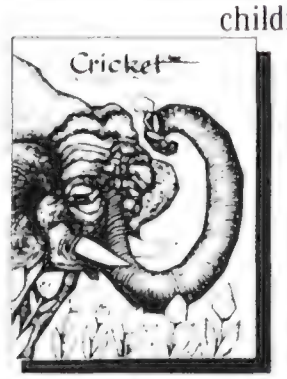

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modern medicine and technical skill with the Gospel. But for all their pretensions, for all the futility of the task taken on with such high hopes, the Wards and their colleagues were also complex human beings, engaged in a struggle they thought worth sacrificing everything to win, and—despite the passage of more than a century and a half, and the stubborn immutability of India—traces of them remain even in Madurai.

Goats pick their way through the old missionary cemetery; there are several small stones among the larger ones, each identified only by a number, and although the leather-bound book that once provided the key to who was buried where seems to have been lost, little Levi Ward presumably lies beneath one of them.

The ecumenical movement has eased the old tensions between Catholic and Protestant converts, and the sectarian bitterness that divided the Protestants of Ferdinand and Jane Ward's time from one another is largely muffled, too: the Church of South India, established with India's independence in 1947, brought the major Protestant churches into a single fold, two million strong. The bishop of Madurai now occupies part of the old mission compound, and bright-eyed children still learn their lessons on the shady verandas where Jane Ward once oversaw their studies.

The Eastgate Church, just across the road, celebrated its 150th anniversary not long ago. "We are still reaping the harvest sown by those first Americans," its current Indian pastor assured a visitor while they strolled around the cool interior, and as he spoke, the old bell cast in Boston began to ring, calling the congregation Ferdinand and Jane Ward helped found to worship once again.

Mementos Ward used as illustrations for American lectures on missionary work included sandals, fans, a model palanquin and a temple bell.

Book reviews

The Magnificent Mountain Women: Adventures in the Colorado Rockies
Janet Robertson
University of Nebraska Press, $21.95

If you were asked to name a bona fide mountain woman, who would she be? Baby Doe Tabor? Señora Kit Carson? Mrs. Jim Bridger? According to the author of this memorable new book on the subject, simply being the wife of a mountain man wouldn't qualify you. She defines mountain women as those who deliberately sought out mountain encounters rather than experience them as passive companions to their menfolk.

Author Janet Robertson, herself a climber and skier, presents for the first time the stories of some three dozen women who, beginning in the gold rush era and continuing to the present, challenged some of the most rugged country in America—the Colorado Rockies. And on their own terms.

Zebulon Pike never climbed the peak that bears his name. He made an attempt the year he first spotted it, 1806, but turned back because he believed the task too difficult. Not until 14 years later was the peak actually scaled, and then not again until 1858 when two separate parties of gold seekers gained the summit. In the second party was 20-year-old Julia Archibald Holmes, who would go down in history as the first woman to climb a Colorado mountain. And she wore bloomers while doing it, a feat as daring as her climb.

Julia's personal philosophy might well have served as a fitting credo for all the doughty females who were to follow. "Believing as I do, in the right of woman to equal privileges with man," she wrote, "I think that when it is in our power we should, in order to promote our own independence, at least, be willing to share the hardships which commonly fall to the lot of man."

Another female mountaineer to invade the state was Anna Dickinson, an opinionated political lecturer whom a Colorado newspaper called "the spice, the pepper and the brains of the women's movement." Her popularity faded after she supported Horace Greeley against U. S. Grant in 1872, however, and she went to Colorado as an antidote for depression. Anna rode horseback to the top of several of Colorado's "fourteeners" (mountains higher than 14,000 feet), including an 1873 ascent of Longs Peak, a more formidable climb than Pikes, although the actual summit is comfortably flat and about the size of a football field.

Did Anna wear bloomers on her ascent? No, she wore trousers—so she could "ride on both sides of a horse at once." It was another scandalous departure from the dress code of the day.

Other distaff climbers followed. There was flabby, overweight Isabella Bird, for example, "so fagged that she was unable to make her way unaided," one of the men of her party wrote. "By alternately pulling and pushing her and stimulating her with snow soaked with Jamaica ginger, we got her to the top." There was Carrie Welton, who climbed Pikes Peak in 1884, and when she spotted Longs Peak 120 miles to the north, decided to climb it as well. Tragically, descending Longs in darkness and maniacal wind, Carrie collapsed from exhaustion and died. In 1906, Victoria Broughm assaulted Longs with only a collie named Scotch for company. She reached the summit but soon was overtaken by a storm and spent the night shivering under a rock ledge. She's in the record books as the first woman to solo a Colorado mountain.

But not all of Robertson's magnificent women were mountain climbers. In 1882, writer Virginia Donaghe—corpulent, addicted to feathered hats and lipstick—journeyed from the Front Range to southwestern Colorado and became the first white woman to see and explore the cliff dwellings at Mesa Verde, which later, with her help, became a national park. In 1907, Dr. Susan Anderson came out from Michigan and set up medical practice in tiny Fraser, Colorado (after trying Cripple Creek and Denver), the renowned icebox of the

Members of Colorado Mountain Club rest partway up Longs Peak in 1914.

nation. Charging whatever her patients could afford—"money, eggs, a chicken, a piece of beef, garden vegetables, a load of firewood or nothing"—Doc Susie, as her patients called her, kept her office open for 50 years.

How's this for fortitude? Without male company, Katherine Garetson homesteaded at 8,000 feet in the rugged terrain destined to become Rocky Mountain National Park. She cleared her land, put up fencing, planted, then built and operated a tearoom from 1915 to 1934. In 1880, Alice Eastwood began a 70-year career by collecting wildflowers above the timberline on Grays Peak (a fourteener named after the famous botanist Asa Gray), then went on to publish more than 300 articles on botany and to work and study at some of the leading herbaria of the world—the British Museum in London, the Jardin des Plantes in Paris, the New York Botanical Garden and the Smithsonian Institution.

The book contains extensive quotes from journals kept by these women, in addition to excerpts from unpublished manuscripts and letters home bequeathed by proud relatives to various libraries and museums from Colorado to California. The use of these original source materials, together with the many photographs, lends a ringing

authenticity to the book. Then too, as author Robertson explains, it was time to write it. "For the sad truth is that most of the women in this book are unknown or by now forgotten. I think it is an undeserved fate for such magnificent women. It's time to set the record straight."

And reading these fascinating stories, we can only agree.

William Dieter
Denver novelist

The American Circus: An Illustrated History
John Culhane
Henry Holt, $39.95

Like the subject itself, *The American Circus* is an extravaganza: a one-volume 500-page chronicle, an encyclopedia, a lavishly illustrated pageant of American history and an unabashed love letter. And in its very comprehensiveness, it has to be one of a kind.

With extra notes, bibliography and index, the book contains more facts, perhaps, than most readers need to know. Still, the very heft of it invites hyperbole, the kind one saw on the posters and broadsides with which advance agents used to plaster the American landscape to insure that a crowd would already be waiting at the local depot when "The Greatest Show on Earth" or one of the "lesser" shows pulled in at 5 A.M. Surely, at least, it's the *biggest* book yet on the circus.

It was written and compiled by an obvious aficionado of the big top. John Culhane has been a reporter and writer on the circus and related subjects, and an occasional walk-on performer in the sawdust ring. Bitten by the circus bug at a tender age, he reports that he saw his first performance when he was 2. However, the family's memory of the circus reaches back more than a century. Culhane fondly recalls seeing Tom Mix and his horse, Tony, but the stories his grandparents told him of seeing the great Buffalo Bill Cody in action made an even more vivid impression.

"My grandparents saw him dash into the arena on his water-smooth silver stallion, pull his mount to its haunches, remove his big cowboy hat, and make a sweeping gesture of salute, while his shoulder-length white hair waved in the breeze and the band played 'The Stars and Stripes Forever.'"

From such recollections, the author naturally felt as though he had seen the great one, too, as well as such stars of that era as Lillian Leitzel, "Queen of Aerial Gymnasts"; May Wirth, the bareback rider; Bird Millman, the high-wire walker; and Mabel Stark, who wrestled a tiger.

The American Circus covers the more than 200 years during which this uniquely innocent and beloved form of entertainment sprouted, prospered, faded and persevered amid the weightier milestones of our nation's history. Despite fires, depressions, blue laws, strikes and competition from the movies and—more damaging—television, it thrives today. Sheer staying power, in fact, may be the circus' most remarkable attribute.

George Washington was among the earliest circus buffs. A fine horseman himself, he was a friend and fan of the pioneer trick rider John Bill Ricketts and he sold Ricketts his famous white charger, Jack. Abraham Lincoln found solace during the darker days of his Presidency in the drolleries of Dan Rice. "Democracy's Jester," as John Culhane aptly dubs him, was also an inspiration to Mark Twain and to cartoonist Thomas Nast, who caricatured him as "Uncle Sam."

Many writers have been ardent fans of the circus and, starting with Emily Dickinson, who called it a "vast morsel" of life, they are quoted tellingly throughout the text. Ernest Hemingway wrote that experiencing the spectacle "gives the quality of a truly happy dream." William Saroyan, Booth Tarkington and Carl Sandburg all recall the circus eloquently. William Lyon Phelps wrote: "Heaven lay about me in my infancy, and it had a circular shape."

Weary Willie tries to crack a peanut—only to be devastated at the result.

All the big names are present—Barnum ("people like to be humbugged"), the Ringlings, the Norths, J. A. Bailey and their successors, the Felds—their roles exhaustively documented. Stories of the famous beasts who were such stellar attractions a generation and more ago are also told: Old Bet and Jumbo (SMITHSONIAN, May 1982) are the most famous elephants, and Old Bet was one of the earliest—exhibited in a traveling menagerie in the 1790s. In the late 1930s, Gargantua the Great, a gorilla billed as "The World's Most Terrifying Creature," was one of John Ringling North's most successful promotions. Later Kenneth Feld fooled almost everybody (briefly) with "The Living Unicorn."

Inevitably, Culhane warms to his task about halfway through the text when he is able to call on personal experiences and firsthand reports in laying out his sprawling story. As though in ringside seats, readers will experience tingling nerves and sweating palms at his accounts of Clyde Beatty braving 40 lions and tigers, Philippe Petit and the Wallenda family on the high wire, and Miguel Vazquez in his quest for the quadruple somersault from the flying trapeze. They will laugh aloud at the antics of Emmett Kelly as "Weary Willie," cracking a peanut with a sledgehammer (below), and Lou Jacobs emerging—preceded by an enormous foot—from his midget car.

Until that more-or-less-contemporary juncture, of course, Culhane must rely as any other historian on previously published material. Presumably he gets absolutely everything in, and the story sometimes sags in the early pages under the weight of facts, dates and other statistical details.

But it's a reference book as well as an "illustrated history," and so patently a labor of love that one easily forgives the author for some infelicitous passages. There are 150 illustrations, most of them of performers, backstage and in action. On the jacket cover, "Princess Victoria," a garishly spangled beauty, prances toward you on the high wire; the format of the book is that of a circus program, which, as the author explains, has since the early days been called "Program of Displays." A little large for a souvenir, it's nevertheless very much worth the price of admission.

James Idema
Chicago writer

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Additional reading

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Smithsonian highlights

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Renwick Gallery
Structure and Surface: Beads in Contemporary American Art (through November 25) Whimsical, offbeat creations by 12 artisans. See *Highlights continued*, page 140.
Four Contemporary Calligraphers (through October 28) English, Chinese, Arabic and Hebrew manuscripts.
New American Furniture (through September 3) Creations by 25 artisans.

Arthur M. Sackler Gallery
Yokohama: Prints from Nineteenth-Century Japan (through September 9) Eighty-five color woodblock prints.
The Noble Path: Buddhist Art of South Asia and Tibet (through September) More than 100 objects reflecting the changing imagery of Buddhism.

Cooper-Hewitt Museum (New York)
Flora Danica *and the Heritage of Danish Porcelain, 1790-1990* (through September 2) Two hundred years of Danish design.

National Museum of Natural History
Life in the Ancient Seas A major new installation, showcasing 2,000 fossils and featuring a diorama of a 230-million-year-old reef.
Gorilla: Struggle for Survival in the Virungas (through August 12) Photographs taken in Rwanda by Nick Nichols.
Dinamation's Dinosaurs, Alive and in Color (through September 3) A menagerie of 18 animated robotic dinos (admission fee).

National Museum of American History
Information Age: People, Information and Technology A major new permanent installation traces the 150-year history of information technology.
From Parlor to Politics: Women and Reform in America, 1890-1925 (through June 1991) A look at the outstanding reformers of the early 20th century.
On the East Broad Top Railroad (through September 13) Forty photographs document the restoration of a 1912 narrow-gauge steam locomotive.

Anacostia Museum
Whose Art Is It, Anyway? (through September 16) A series of photographs, depicting sculptures and murals installed in public spaces, exhibited in conjunction with workshops on dance, music, storytelling and art.

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Yoruba: Nine Centuries of African Art and Thought (through August 26) Mas-

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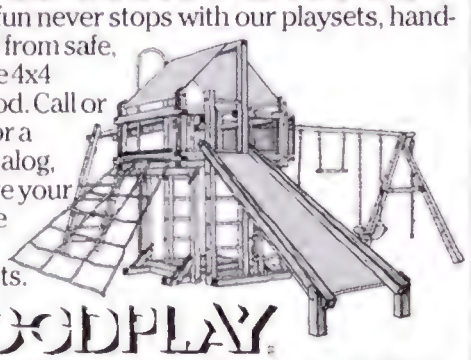

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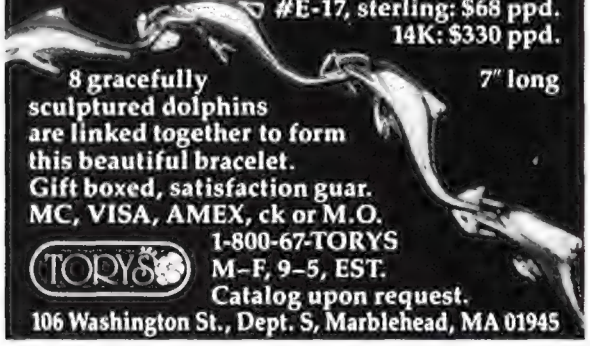

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terworks of Yoruba artists from Nigeria and Benin, 12th century to the present.
Icons: Ideals and Power in the Art of Africa (through September 3) A survey of recurrent themes in African art.

National Museum of American Art
Missouri Portfolio: The Drawings of George Caleb Bingham (through August 19) Works by an American master.
Irving Penn: Master Images (through August 19) A selection of 60 photographs from the NMAA collection.

National Portrait Gallery
The Five of Hearts (through November 4) Portraits of a 19th-century circle of friends, including Henry Adams and his wife, Clover.
Working for Time: *The Covers of Robert Vickrey* (through November 4) Portraits of subjects from Nelson Rockefeller to John Updike.
Irving Penn: Master Images (through August 19) Sixty portraits from the NPG collection.

Hirshhorn Museum & Sculpture Garden
Bay Area Figurative Art, 1950-1965 (through September 9) More than 60 paintings by artists from Richard Diebenkorn to David Park.
DIRECTIONS: Christian Marclay (through September 30) The New York artist's assemblage of discarded musical artifacts, LPs to album covers.

National Air and Space Museum
Trust But Verify / Do Veri, No Pro Veri A new permanent exhibition features a U.S. Pershing II missile and a Soviet SS-20 missile and explains the International Nuclear Forces (INF) treaty between the two countries.
A Piece of Mars? (indefinite) The fragment of meteorite discovered in Antarctica in 1979 and thought to be from Mars.
Drawings and Things by Rowland Emmett (through December) A lighthearted look at airplanes and spacecraft.

Exhibition catalogs

Catalogs available currently include:
Bay Area Figurative Art, 1950-1965 ($27.50, paper; $47.50, cloth)
Oliphant's Presidents ($12.95, paper)
Gorilla: Struggle for Survival in the Virungas ($19.95, paper)

To order, send check or money order to Museum Shops, 3301 75th Avenue, Landover, Maryland 20785. Include 15 percent of total purchase to cover postage and handling (minimum, $1.75).

Smithsonian on the air

Radio Smithsonian: Features include stories on singer Mabel Mercer, activist Angela Davis and the Honorable Robert J. Bork.
Here at the Smithsonian: Three-minute TV spots take you behind the scenes. To find out which stations in your area carry these radio and TV programs, write: Office of Telecommunications, MAH Room BB40, Washington, D.C. 20560.
From the Smithsonian: A series of five programs, produced by the Office of Telecommunications, will air on the Learning Channel, a cable network, during August: *The Work of Peace, The Battle of Yorktown, Thomas A. Edison and His Amazing Invention Factories, Magnificent Voyagers: The United States Exploring Expedition, 1838-1842,* and *Celebrating a Century: The 1876 Philadelphia Centennial Exhibition.* Check local listings for date, time, channel.

Resident Associate Program

To become a Resident Associate, or to obtain fee and ticket information, call 357-3030. Some August events:
Voices from Male Black Writers: The Satire of Ishmael Reed (August 21; 7:30) The National Book Award nominee on life and art.
Ossie Davis Reads from the Works of Great Black Men (August 24; 7:30 P.M.) The actor, writer and director in an evening of dramatic readings.

Smithsonian Institution Traveling Exhibition Service

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian, Washington, D.C. 20560. Here are some August exhibits:
Chico, California (August 9-September 20) *What Style Is It?,* Chico Museum.
Salina, Kansas (August 18-October 14) *Training the Hand and Eye: American Drawings from the Cooper-Hewitt Museum,* Salina Arts Center.
St. Leonard, Maryland (August 18-September 16) *After the Revolution: Everyday Life in America, 1780-1800,* Jefferson Patterson Park and Museum.

SMITHSONIAN SEMINARS AND EXPEDITIONS

Seminars

Highlights of Austrian Civilization *October 6-17* Salzburg and Vienna.

NEW American Folk Art *October 9-12* Washington, D.C.

NEW Chesapeake Bay Ecology *October 14-18* Annapolis.

The Art and Craft of Creative Writing *October 14-18* Annapolis. Study and write with SMITHSONIAN columnist Edwards Park.

Santa Fe *October 28-November 1* Explore Southwestern art, archaeology or literature.

Egypt *November 16-December 1* Classes in Cairo; cruise on the Nile.

NEW Eastern Europe-USSR Update *November 27-30* Scholars and journalists discuss dramatic political and cultural changes.

NEW The Venetian Tradition *January 15-18* Washington, D.C. See Titian and Van Dyck exhibitions at the National Gallery of Art.

American Antique Furniture *January 28-31* Washington, D.C.

Exploring the Sea *February 3-7* Fort Pierce, Florida. Study marine biology.

Story into Art: Mythology and Visual Images *February 11-15* Washington, D.C.

Broadcast Journalism *March 10-15* Washington, D.C.

Research Expeditions

Contribute your talent and financial resources to Smithsonian research. Work with curators in Washington, D.C. or at field sites worldwide.

Orofino, Idaho *September 11-21* Record Lumberjack Days festivities.

Washington, D.C. *October 28-November 3* Transfer still photographs to videodisks.

Costa Rica *April 6-18 or July 6-18.* Monitor geologic activity and collect plant specimens at an active volcano site.

For tours, additional seminars and the address for brochures, see inside back cover. Or call (202) 357-4700 for seminar brochures, (202) 287-3210 for expedition brochures.

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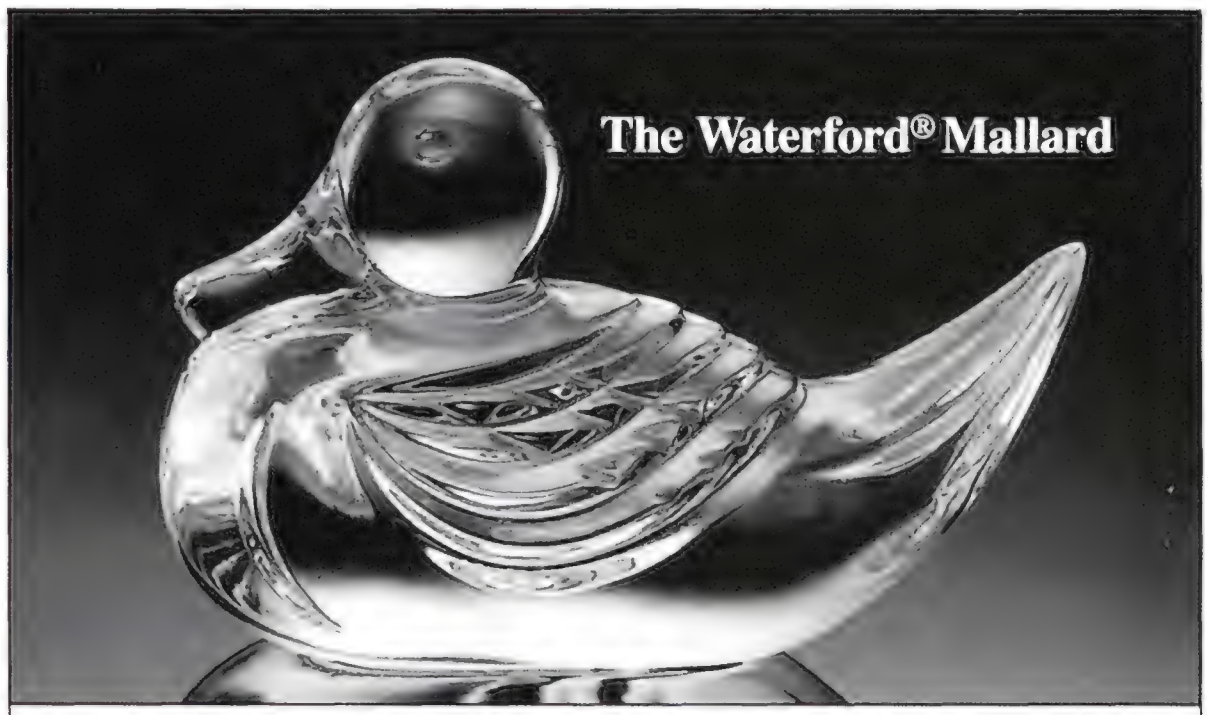

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Each of the 45 objects in the Renwick Gallery's "Structure and Surface: Beads in Contemporary Art" celebrates the use of beads, not as mere ornaments but as the underpinning for art objects.

Beads have, of course, served many purposes across time and cultures: as articles of adornment, ritual artifacts, repositories of curative power, symbols of social status. From the 17th century into the 19th, glass beads were employed as barter in the trade for gold, spices and slaves.

The pieces in "Structure and Surface," from glittering trophy fish to offbeat shaman figure, share an antic, whimsical twist. Originally organized by, and displayed at, the John Michael Kohler Arts Center in Sheboygan, Wisconsin, the exhibition continues through November 25.

Kathleen M. Burke

Zwillinger's *Paramount* sets picture-perfect view in a marquee-style frame.

Sentinel Shaman, by Zwillinger, uses faux jewels in a wacky ritual object.

Larry Fuente's *Mother Duck* offers a lighthearted jab at the decoy tradition.

Game Fish, a variation on a sportsman's trophy by Larry Fuente, is encrusted not only with beads, but also with layers of objects evoking gamesmanship—chess pieces, dominoes, dice and Ping-Pong balls.

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By Michael Kernan

Buddy, Jean and me, going great guns

Three little citizens are looking at you from a lost March afternoon in the 1930s on a farm in upstate New York. Those are pistols pointing at you. That's me on the right, age about 10, and my sister Jean, a year younger but for the moment taller than I, and on the left my friend Buddy Billings.

Buddy's actual name, he once confessed, was Avery, and I haven't told a soul until this very moment. He lived next door, which is to say about a quarter-mile up Norton Road. That was as near as you got in the country. The Billingses were tenant farmers, and in their house I first sensed the acrid smell of poverty. You note that Buddy has no gloves, so he habitually carries his hands inside his sleeves. He always had a cold, too, or perhaps swollen adenoids, and talked with his nose stuffed up. Sometimes there was a drip at the end of it.

(I wonder whatever happened to swollen adenoids.)

On a farm you didn't have much company, so Buddy and I saw a lot of each other. One time we built a tin-can telephone between our houses, using a fine cord that we rubbed with rosin from my violin case. It took us all day, and we wore little trenches into the rosin blocks. We stretched the cord across the pasture, and that night we tried to talk to each other.

We never heard a sound. With most tin-can systems you can plainly hear the other kid yelling at his end, but we were too far apart for that. The next morning we discovered that the cows had broken our phone line. We had strung it at waist height.

Anyway, what I wanted to tell you about was the guns. They were basic to our way of life. Every boy owned at least two guns, and they had to fit in your pocket. In my room I had a lifesize Buck Rogers Rocket Pistol that made a loud pop (it was supposed to go *Zaaaap!* according to the strip), but it was no good for combat.

There were some rules: 1) Anything shaped like a gun was a gun. It could be a 25-cent silver-painted cast-iron cap pistol, with or without caps, or a chunk of wood sawed in an L shape with a nail for a trigger. They all counted. 2) When you were shot and had finished with your operatic death scene (complete with "*Gaaaaah!*" and bravura collapse), you were honor-bound not to jump up and be someone else. You had to wait for the next episode or phase—and we all knew by instinct when that was. And 3) Girls were not encouraged. Jean thought the whole business was silly, as she is subtly suggesting here in the picture.

All I remember about these endless battles was a great amount of running around: behind the barn, through the shed where the hay rakes were kept, into the stone ruins of the old barn, which had burned down years ago, and in, under and on top of my playhouse. The playhouse was great for sieges, especially since I had honeycombed it with trapdoors and tunnels. We had all seen a movie about the Lincoln County War, with its famous ranch house siege, and we reenacted it many times, including the part where the guy rushes out to get water at the pump. How we fought to be the guy, who died with a hundred bullets in him every time!

Then came the Russo-Finnish War. My father got the New York *Herald-Tribune* (partly for its politics, partly because the *Times* had no funnies), and for months I followed the saga of the Finns in their white ski parkas, holding off hordes of Russians. The paper ran maps of the fighting, and every day, it seemed, another Russian division would be wiped out on the frozen lakes.

On a winter afternoon, when the snow swirled across the blinding white pastures and the wind stung my face, I played Finns and Russians by myself. Entrenched against the blizzard, I would fire my Daisy Golden Eagle BB gun and charge over the icy steppes.

It was uphill all the way, and in the howling storm you couldn't see 20 feet. The snow fences, half buried in their drifts, leaning crazily with the tops snapped off here and there, were pure World War I, at that time still the standard reference for war images.

I could go on for hours. I would be dying in a snowdrift, and my English teacher, Miss Haywarden, with her sleek bun of brown hair and her disturbing knit dress, would rescue me. No. She would be dying. She would be a nurse, and I would find her in a drift and rescue *her*. And then I would save a wounded Russian, and he would turn out to be Miss Haywarden's brother, and we would all die again.

I never could trust Buddy with this drama. I didn't think he would understand its epic quality.

In the summer I sometimes shot at sparrows with my Golden Eagle. I prowled around the barns like a little assassin, my eyes on the telephone wires. The gun (or I) didn't shoot very straight, and I rarely hit anything. Besides, after the heart-catching excitement of the fluttering fall, there was a small dead bird to deal with. And my mother clucking at me from the kitchen doorway.

Later I got a bolt-action Savage Arms .22 rifle, but the cartridge cases kept sticking in the chamber, so I always had to carry a pair of pliers when I went hunting. I didn't use it much.

The real guns were never as much fun as the play ones. It was a different time, I guess.

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